

## SEQUENCE LISTING

&lt;110&gt; AUJAME et al.

&lt;120&gt; Nucleic acids and polypeptides specific for pathogenic strains of the Neisseria genus

&lt;130&gt; P07180US00/BAS

&lt;140&gt; 09/830,433

&lt;141&gt; 2001-04-26

&lt;150&gt; FR 98 13 693

&lt;151&gt; 1998-10-30

&lt;160&gt; 129

&lt;170&gt; PatentIn Ver. 2.1

&lt;210&gt; 1

&lt;211&gt; 858

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(855)

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Leu	Ile	Ala	Asn	Ala	Tyr	Asp	Ala	Cys	Ala	Thr	Glu	Val	Glu	Val	Arg	
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Leu	Phe	Asp	Lys	Pro	Glu	His	Lys	Ile	Val	Ile	Lys	Asp	Asn	Gly	Ile	
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Gly	Met	Ser	Phe	Asp	Glu	Ile	Asn	Asp	Phe	Tyr	Leu	Arg	Ile	Gly	Arg	
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aac	aga	agg	gaa	gaa	aaa	caa	gct	tcc	ccg	tgc	gga	aga	gct	cca	acg	288
Asn	Arg	Arg	Glu	Glu	Lys	Gln	Ala	Ser	Pro	Cys	Gly	Arg	Ile	Pro	Thr	
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ggt	aaa	aaa	ggc	ctt	ggt	aaa	ttg	gca	tta	ttc	ggg	ctt	ggc	aac	aaa	336
Gly	Lys	Lys	Gly	Leu	Gly	Lys	Leu	Ala	Leu	Phe	Gly	Leu	Gly	Asn	Lys	
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Ile	Glu	Ile	Ser	Thr	Ile	Gln	Gly	Asn	Glu	Arg	Val	Thr	Phe	Thr	Leu	
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tta acc gaa ctg acg aaa aag caa gga tat ccg tta gat aat tat gta	528
Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val	
165 170 175	
gag cat ctt tcc cgc ttg ttt gat ttt ccg gct cag gat ttt aaa atc	576
Glu His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile	
180 185 190	
aaa gta agc ttg aac ggc tct gaa cct aaa atc att gat gga aat cta	624
Lys Val Ser Leu Asn Gly Ser Glu Pro Lys Ile Ile Asp Gly Asn Leu	
195 200 205	
aaa tat gat ctt gtt acc cca caa ttc gaa tgg gaa tac cag gat tta	672
Lys Tyr Asp Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu	
210 215 220	
gca acc aat att tca tct tta tct tca aaa ttc gaa cag tat gaa tac	720
Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr	
225 230 235 240	
agc gga tta ata caa ggt aag ttc att aca acg gaa aaa cct tta aag	768
Ser Gly Leu Ile Gln Gly Lys Phe Ile Thr Thr Glu Lys Pro Leu Lys	
245 250 255	
aat aat atg aaa ggt att acc ttg ttt gcc aac ggc aga atg gta aat	816
Asn Asn Met Lys Gly Ile Thr Leu Phe Ala Asn Gly Arg Met Val Asn	
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 145 150 155 160  
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 Glu His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile  
 180 185 190  
 Lys Val Ser Leu Asn Gly Ser Glu Pro Lys Ile Ile Asp Gly Asn Leu  
 195 200 205  
 Lys Tyr Asp Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu  
 210 215 220  
 Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr  
 225 230 235 240  
 Ser Gly Leu Ile Gln Gly Lys Phe Ile Thr Thr Glu Lys Pro Leu Lys  
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 Asp Lys Leu Leu Thr Glu Asn Thr His Ile Trp Leu Phe Ile Gly Val  
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 tta cac aaa atg tta cct att agt ctg gtg caa tcc cta cta cgt ttc 144  
 Leu His Lys Met Leu Pro Ile Ser Leu Val Gln Ser Leu Leu Arg Phe  
 35 40 45  
 ggc gaa cgt gtc cat ctt gtc cag tta caa aaa acg ggg aaa aac gca 192  
 Gly Glu Arg Val His Leu Val Gln Leu Gln Lys Thr Gly Lys Asn Ala  
 50 55 60  
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 Leu Asp Phe Tyr Leu Ser Tyr Tyr Leu Gly Gln Ile Thr Ala Thr Asp  
 65 70 75 80  
 ccc aat gcc caa atc ggc ata ctc tcg cgt gat gga gga tac gat gtt 288  
 Pro Asn Ala Gln Ile Gly Ile Leu Ser Arg Asp Gly Gly Tyr Asp Val  
 85 90 95

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Leu Val Glu His Ile	Lys Asn His Gln Ala Lys Gly Ile	Ala Arg	
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cta gcc aat ata gat gaa gta caa cat cag aaa att gct acc gaa ccg	384		
Leu Ala Asn Ile Asp Glu Val Gln His Gln Lys Ile Ala Thr Glu Pro			
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Pro Gln Gln Pro Leu Thr Ser Tyr Phe Gln Ala Ala Leu Thr Ala Leu			
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Arg Arg Pro Asp Ala Phe Arg Pro Cys Arg Leu His Asn Leu Arg Gln			
165	170	175	
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Asn Leu Arg Lys His Ile Leu Ser Asp Leu Phe Lys Glu Lys Thr Asp			
180	185	190	
gaa gaa tgc gaa ata acc act gct aac gtt atc aat aaa ctc aaa gca	624		
Glu Glu Cys Glu Ile Thr Thr Ala Asn Val Ile Asn Lys Leu Lys Ala			
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225	230	235	240
cgt ccc aaa acc tac gct gat ttt caa gcc gtc gtg caa aac cga gca	768		
Arg Pro Lys Thr Tyr Ala Asp Phe Gln Ala Val Val Gln Asn Arg Ala			
245	250	255	
gat gca ctt cac tta aca gtc ggt acc aac gac att caa tcc ttt gcg	816		
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260	265	270	
cga cat ttg cgc gac caa aac ctg atc cgc caa aac aat ggg aaa att	864		
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275	280	285	
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Glu Tyr Ala Pro Phe Thr Glu Pro Lys Pro Gln Pro Thr Pro Lys Gln			
290	295	300	
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Pro Lys Lys Thr Ala Trp Glu Pro Asp Glu Ile Ile Trp Lys Lys Val			
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Ile Ala Ala Leu Ser Leu Lys Asn Arg Pro Asn Lys Thr Lys Thr Leu			
325	330	335	
cgc aat aca atc cag gca ctc aca aaa tcc aat gca caa gaa act gac	1056		
Arg Asn Thr Ile Gln Ala Leu Thr Lys Ser Asn Ala Gln Glu Thr Asp			
340	345	350	
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Leu His Lys Met Leu Pro Ile Ser Leu Val Gln Ser Leu Leu Arg Phe  
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Gly Glu Arg Val His Leu Val Gln Leu Gln Lys Thr Gly Lys Asn Ala  
 50 55 60

Leu Asp Phe Tyr Leu Ser Tyr Tyr Leu Gly Gln Ile Thr Ala Thr Asp  
 65 70 75 80

Pro Asn Ala Gln Ile Gly Ile Leu Ser Arg Asp Gly Gly Tyr Asp Val  
 85 90 95

Leu Val Glu His Ile Leu Lys Asn His Gln Ala Lys Gly Ile Val Arg  
 100 105 110

Leu Ala Asn Ile Asp Glu Val Gln His Gln Lys Ile Ala Thr Glu Pro  
 115 120 125

Pro Ser Ala Leu Leu Glu Asn Thr Pro Gln Pro Glu Thr Thr Leu Lys  
 130 135 140

Pro Gln Gln Pro Leu Thr Ser Tyr Phe Gln Ala Ala Leu Thr Ala Leu  
 145 150 155 160

Arg Arg Pro Asp Ala Phe Arg Pro Cys Arg Leu His Asn Leu Arg Gln  
 165 170 175

Asn Leu Arg Lys His Ile Leu Ser Asp Leu Phe Lys Glu Lys Thr Asp  
 180 185 190

Glu Glu Cys Glu Ile Thr Thr Ala Asn Val Ile Asn Lys Leu Lys Ala  
 195 200 205

Gln Asn Phe Ile Ser Ile Asp Glu Gln Glu Thr Val Ser Tyr His Leu  
 210 215 220

Ser Asp Asn Asp Leu Leu Gln Arg Ile Gln Arg His Ile Leu Ser Gln  
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Arg Pro Lys Thr Tyr Ala Asp Phe Gln Ala Val Val Gln Asn Arg Ala  
 245 250 255

Asp Ala Leu His Leu Thr Val Gly Thr Asn Asp Ile Gln Ser Phe Ala  
 260 265 270

Arg His Leu Arg Asp Gln Asn Leu Ile Arg Gln Asn Asn Gly Lys Ile  
 275 280 285

Glu Tyr Ala Pro Phe Thr Glu Pro Lys Pro Gln Pro Thr Pro Lys Gln  
 290 295 300

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Pro Lys Lys Thr Ala Glu Pro Asp Glu Ile Ile Trp Lys Lys Val  
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325 330 335

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Lys Leu Leu Gln His Leu Gln Asp Asp Pro Ser Pro Thr Tyr  
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35 40 45

ctg tat ctg ttt gcg cgt tat aag gct tcg cgg ctg ctg att gcg gtg 192  
Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val  
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Phe Phe Ala Phe Ser Ile Ile Ala Asn Asn Val His Tyr Ala Val Tyr  
65 70 75 80

caa agt tgg atg acg ggc atc aat tat tgg ctg atg ctg aaa gag att 288  
Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Ile  
85 90 95

acc gaa gtc ggc agt gcg ggc gcg tcg atg ttg gat aag ttg tgg ctg 336  
Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu  
100 105 110

cct gcg ttg tgg ggc gtg ttg gaa gtc atg ttg ttt tgc agc ctt gcc 384  
Pro Ala Leu Trp Gly Val Leu Glu Val Met Leu Phe Cys Ser Leu Ala  
115 120 125

aag ttc cac cgt aag acg cat ttt tct gcc gat ata ctg ttt gcc ttc 432  
Lys Phe His Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe  
130 135 140

cta atg ctg atg att ttc gtg cgt tcg ttc gac acg aaa caa gag cac 480  
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145 150 155 160

ggt att tcg ccc aaa ccg aca tac agc cgc atc aaa gcc aat tat ttc 528

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Leu	Thr	Arg	Leu	Ser	Gln	Ala	Asp	Phe	Lys	Pro	Ile	Val	Lys	Gln	Ser	
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Glu	Leu	Ile	Val	Asp	Lys	Tyr	Asp	Asn	Thr	Ile	His	Lys	Thr	Asp	Gln	
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Met	Ile	Gln	Thr	Val	Phe	Glu	Gln	Leu	Gln	Lys	Gln	Pro	Asp	Gly	Asn	
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Trp	Leu	Phe	Ala	Tyr	Thr	Ser	Asp	His	Gly	Gln	Tyr	Val	Arg	Gln	Asp	
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gtg ttg tac agc tcg aat aag gcc gtg caa cag gct gcc aac cag gct	1392	
Val Leu Tyr Ser Ser Asn Lys Ala Val Gln Gln Ala Ala Asn Gln Ala		
450 455 460		
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Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe Leu		
465 470 475 480		
att cac acg ttg ggc tac gat atg ccg gtt tca ggt tgt cgc gaa ggc	1488	
Ile His Thr Leu Gly Tyr Asp Met Pro Val Ser Gly Cys Arg Glu Gly		
485 490 495		
tcg gta acg ggc aac ctg att acg ggt gat gca ggc agc ttg aac att	1536	
Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn Ile		
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Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val	
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Phe Phe Ala Phe Ser Ile Ile Ala Asn Asn Val His Tyr Ala Val Tyr	
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100 105 110	
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165 170 175	
Ser Phe Gly Tyr Phe Val Gly Arg Val Leu Pro Tyr Gln Leu Phe Asp	

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180

185

190

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225					230					235				Phe
Leu	Thr	Arg	Leu	Ser	Gln	Ala	Asp	Phe	Lys	Pro	Ile	Val	Lys	Gln
				245					250					255
Tyr	Ser	Ala	Gly	Phe	Met	Thr	Ala	Val	Ser	Leu	Pro	Ser	Phe	Phe
			260					265					270	Asn
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Ser	Ala	Gln	Ala	Glu	Asn	Glu	Met	Ala	Ile	Leu	Asn	Leu	Ile	Gly
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Gly	Asp	Asn	Met	Pro	Asp	Glu	Lys	Leu	Leu	Pro	Leu	Phe	Asp	Lys
			340					345					350	Ile
Asn	Leu	Gln	Gln	Gly	Arg	His	Phe	Ile	Val	Leu	His	Gln	Arg	Gly
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His	Ala	Pro	Tyr	Ser	Ala	Leu	Leu	Gln	Pro	Gln	Asp	Lys	Val	Phe
	370					375					380			Gly
Glu	Leu	Ile	Val	Asp	Lys	Tyr	Asp	Asn	Thr	Ile	His	Lys	Thr	Asp
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				405				410					415	Asn
Trp	Leu	Phe	Ala	Tyr	Thr	Ser	Asp	His	Gly	Gln	Tyr	Val	Arg	Gln
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Ile	Tyr	Asn	Gln	Gly	Thr	Val	Gln	Pro	Asp	Ser	Tyr	Leu	Val	Pro
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Val	Leu	Tyr	Ser	Ser	Asn	Lys	Ala	Val	Gln	Gln	Ala	Ala	Asn	Gln
	450					455					460			Ala
Phe	Ala	Pro	Cys	Glu	Ile	Ala	Phe	His	Gln	Gln	Leu	Ser	Thr	Phe
465					470					475				Leu
Ile	His	Thr	Leu	Gly	Tyr	Asp	Met	Pro	Val	Ser	Gly	Cys	Arg	Glu
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Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly	
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ggc ggc act tct gcg ccc gac ttc aat gca ggc ggc acc ggt atc ggc	144
Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile Gly	
35 40 45	
agc aac agc aga gca aca aca gcg aaa tca gca gca gta tct tac gcc	192
Ser Asn Ser Arg Ala Thr Thr Ala Lys Ser Ala Ala Val Ser Tyr Ala	
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ggt atc aag aac gaa atg tgc aaa gac aga agc atg ctc tgt gcc ggt	240
Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala Gly	
65 70 75 80	
cgg gat gac gtt gcg gtt aca gac agg gat gcc aaa atc aat gcc ccc	288
Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Asn Ala Pro	
85 90 95	
ccc ccg aat ctg cat acc gga gac ttt aca aac cca aat gac gca tac	336
Pro Pro Asn Leu His Thr Gly Asp Phe Thr Asn Pro Asn Asp Ala Tyr	
100 105 110	
aag aat ttg atc aac ctc aaa cct gca att gaa gca ggc tat aca gga	384
Lys Asn Leu Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr Gly	
115 120 125	
cgc ggg gta gag gta ggt atc gtc gat aca ggc gaa tcc gtc ggc agc	432
Arg Gly Val Glu Val Gly Ile Val Asp Thr Gly Glu Ser Val Gly Ser	
130 135 140	
ata tcc ttt ccc gaa ctg tat ggc aga aaa gaa cac ggc tat aac gaa	480
Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn Glu	
145 150 155 160	
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Asn Tyr Lys Asn Tyr Thr Ala Tyr Met Arg Lys Glu Ala Pro Glu Asp	
165 170 175	
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Gly Gly Gly Lys Asp Ile Lys Ala Ser Phe Asp Asp Glu Ala Val Ile	
180 185 190	
gag act gaa gca aag ccg acg gat atc cgc cac gta aaa gaa atc gga	624
Glu Thr Glu Ala Lys Pro Thr Asp Ile Arg His Val Lys Glu Ile Gly	
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His Ile Asp Val Val Ser His Ile Ile Gly Gly Arg Ser Val Asp Gly	
210 215 220	

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Arg Pro Ala Gly Gly	Ala Pro Asp Ala Thr Leu His Ile Met Asn	
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acg cat gat gga acc aag aac gaa ata atg tct gca gcc atc cgc aat	768	
Thr His Asp Gly Thr Lys Asn Glu Ile Met Ser Ala Ala Ile Arg Asn		
245	250 255	
gca tgg gtc aag ctg ggc gaa cgt ggc gtg cgc atc gtc aat aac agt	816	
Ala Trp Val Lys Leu Gly Glu Arg Gly Val Arg Ile Val Asn Asn Ser		
260	265 270	
ttt gga aca aca tcg agg gca ggc act gcc gac cat ttc caa ata gcc	864	
Phe Gly Thr Thr Ser Arg Ala Gly Thr Ala Asp His Phe Gln Ile Ala		
275	280 285	
aat tcg gag gag cag tac cgc caa gcg ttg ctc gcc tat tcc ggc ggt	912	
Asn Ser Glu Glu Gln Tyr Arg Gln Ala Leu Leu Ala Tyr Ser Gly Gly		
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gat aaa aca gac gag ggt atc cgc ctg atg caa cag agc gat tac ggc	960	
Asp Lys Thr Asp Glu Gly Ile Arg Leu Met Gln Gln Ser Asp Tyr Gly		
305	310 315 320	
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Asn Leu Ser Tyr His Ile Arg Asn Lys Asn Met Leu Phe Ile Phe Ser		
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Ala Ser Asn Asp Ala Gln Ala Gln Pro Asn Thr Leu Thr Leu Leu Pro		
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Phe Tyr Glu Lys Asp Ala Gln Lys Gly Ile Ile Thr Val Ala Gly Val		
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Asp Arg Ser Gly Glu Lys Phe Asn Gly Ser Asn His Cys Gly Ile Thr		
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Ala Met Trp Cys Leu Ser Ala Pro Tyr Glu Ala Ser Val Arg Phe Thr		
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Arg Thr Asn Pro Ile Gln Ile Ala Gly Thr Ser Phe Ser Ala Pro Ile		
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Val Thr Gly Thr Ala Ala Leu Leu Leu Gln Lys Tyr Pro Trp Met Ser		
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aac gac aac ctg cgt acc acg ctg ctg aca acg gct cag gac atc ggt	1344	
Asn Asp Asn Leu Arg Thr Thr Leu Leu Thr Thr Ala Gln Asp Ile Gly		
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Ala Val Gly Val Asp Ser Lys Phe Gly Trp Gly Leu Leu Asp Ala Gly		
450	455 460	
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Lys Ala Met Asn Gly Pro Ala Ser Phe Pro Phe Gly Asp Phe Thr Ala		
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Asp	Thr	Lys	Gly	Thr	Ser	Asp	Ile	Ala	Tyr	Ser	Phe	Arg	Asn	Asp	Ile		
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tca	ggc	acg	ggc	ggc	ctg	atc	aaa	aaa	ggc	ggc	agc	caa	ctg	caa	ctg	1536	
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cac	ggc	aac	aac	acc	tat	acg	ggc	aaa	acc	att	atc	gaa	ggc	ggt	tcg	1584	
His	Gly	Asn	Asn	Thr	Tyr	Thr	Gly	Lys	Thr	Ile	Ile	Glu	Gly	Gly	Ser		
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ctg	gtg	ttg	tac	ggc	aac	aac	aaa	tcg	gat	atg	cgc	gtc	gaa	acc	aaa	1632	
Leu	Val	Leu	Tyr	Gly	Asn	Asn	Lys	Ser	Asp	Met	Arg	Val	Glu	Thr	Lys		
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ggt	gcg	ctg	att	tat	aac	ggg	gcg	gca	tcc	ggc	ggt	agc	ctg	aac	agc	1680	
Gly	Ala	Leu	Ile	Tyr	Asn	Gly	Ala	Ala	Ser	Gly	Gly	Ser	Leu	Asn	Ser		
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acc	gtg	cac	atc	aaa	ggc	gat	ctg	cag	ctg	ggc	ggc	gaa	ggt	acg	ctg	1776	
Thr	Val	His	Ile	Lys	Gly	Asp	Leu	Gln	Leu	Gly	Gly	Glu	Gly	Thr	Leu		
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tac	aca	cgt	ttg	ggc	aaa	ctg	ctg	aaa	gtg	gac	ggt	acg	gcg	atg	acc	1824	
Tyr	Thr	Arg	Leu	Gly	Lys	Leu	Leu	Lys	Val	Asp	Gly	Thr	Ala	Met	Thr		
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ggc	ggc	aag	ctg	tac	atg	tcg	gca	cgc	ggc	aaa	ggg	gca	ggc	tat	ctc	1872	
Gly	Gly	Lys	Leu	Tyr	Met	Ser	Ala	Arg	Gly	Lys	Gly	Ala	Gly	Tyr	Leu		
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aac	cgt	acc	gga	caa	cgt	gtt	ccc	ttc	ctg	agt	gcc	gcc	aaa	atc	ggg	1920	
Asn	Arg	Thr	Gly	Gln	Arg	Val	Pro	Phe	Leu	Ser	Ala	Ala	Lys	Ile	Gly		
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cgg	gat	tat	tct	ttc	ttc	aca	aac	atc	gaa	acc	gac	ggt	ggt	ctg	ctg	1968	
Arg	Asp	Tyr	Ser	Phe	Phe	Thr	Asn	Ile	Glu	Thr	Asp	Gly	Gly	Leu	Leu		
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gct	tcc	ctc	gac	agc	gtc	gaa	aaa	aca	gcg	ggc	agt	gaa	ggc	gac	acg	2016	
Ala	Ser	Leu	Asp	Ser	Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr		
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ctg	tcc	tat	tat	gtc	cgt	cgc	ggc	aat	gcg	gca	cgg	act	gct	tcg	gca	2064	
Leu	Ser	Tyr	Tyr	Val	Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala		
675																680	685
gcg	gca	cat	tcc	gcg	ccc	gcc	ggt	ctg	aaa	cac	gcc	gta	gaa	cag	ggc	2112	
Ala	Ala	His	Ser	Ala	Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly		
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ggc	agc	aat	ctg	gaa	aac	ctg	atg	gtc	gaa	ctg	gat	gcc	tcc	gaa	tca	2160	
Gly	Ser	Asn	Leu	Glu	Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser		
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tcc	gca	aca	ccc	gag	acg	gtt	gaa	act	gcg	gcc	gcc	gac	cgc	aca	gat	2208	
Ser	Ala	Thr	Pro	Glu	Thr	Val	Glu	Thr	Ala	Ala	Ala	Asp	Arg	Thr	Asp		
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Tyr	Thr	Arg	Leu	Gly	Lys	Leu	Leu	Lys	Val	Asp	Gly	Thr	Ala	Met	Thr	
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Gly Gly Lys Leu Tyr Met Ser Ala Arg Gly Lys Gly Ala Gly Tyr Leu  
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Asn Arg Thr Gly Gln Arg Val Pro Phe Leu Ser Ala Ala Lys Ile Gly  
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cgg gat tat tct ttc ttc aca aac atc gaa acc gac ggt ggt ctg ctg 1968  
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660 665 670

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675 680 685

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Val Gln His Ala Asn Ala Asp Gly Val Arg Ile Phe Asn Ser Leu	
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Ala Ala Thr Val Tyr Ala Asp Ser Thr Ala Ala His Ala Asp Met Gln	
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Gln Gly Gly Val Glu Gly Lys Met Arg Gly Ser Thr Gln Thr Val Gly	
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Met Gly His Ser Thr Trp Ser Glu Asn Ser Ala Asn Ala Lys Thr Asp	
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Ser Ile Ser Leu Phe Ala Gly Ile Arg His Asp Ala Gly Asp Ile Gly	
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Tyr Leu Lys Gly Leu Phe Ser Tyr Gly Arg Tyr Lys Asn Ser Ile Ser	
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Arg Ser Thr Gly Ala Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr	
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Leu Met Gln Leu Gly Ala Leu Gly Gly Val Asn Val Pro Phe Ala Ala	
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Gln Pro Leu Ser Asp Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu	
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	450					455					460				
Lys	Ala	Met	Asn	Gly	Pro	Ala	Ser	Phe	Pro	Phe	Gly	Asp	Phe	Thr	Ala
465					470					475					480
Asp	Thr	Lys	Gly	Thr	Ser	Asp	Ile	Ala	Tyr	Ser	Phe	Arg	Asn	Asp	Ile
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Ser	Gly	Thr	Gly	Gly	Leu	Ile	Lys	Lys	Gly	Gly	Ser	Gln	Leu	Gln	Leu
			500					505					510		
His	Gly	Asn	Asn	Thr	Tyr	Thr	Gly	Lys	Thr	Ile	Ile	Glu	Gly	Gly	Ser
		515					520					525			
Leu	Val	Leu	Tyr	Gly	Asn	Asn	Lys	Ser	Asp	Met	Arg	Val	Glu	Thr	Lys
	530					535					540				
Gly	Ala	Leu	Ile	Tyr	Asn	Gly	Ala	Ala	Ser	Gly	Gly	Ser	Leu	Asn	Ser
545					550					555					560
Asp	Gly	Ile	Val	Tyr	Leu	Ala	Asp	Thr	Asp	Arg	Ser	Gly	Ala	Asn	Glu
				565					570					575	
Thr	Val	His	Ile	Lys	Gly	Asp	Leu	Gln	Leu	Gly	Gly	Glu	Gly	Thr	Leu
			580					585					590		

093043 08104

Tyr	Thr	Arg	Leu	Gly.	Leu	Leu	Lys	Val	Asp	Gly	Thr	Ala	Met	Thr	595	600	605	
Gly	Gly	Lys	Leu	Tyr	Met	Ser	Ala	Arg	Gly	Lys	Gly	Ala	Gly	Tyr	Leu	610	615	620
Asn	Arg	Thr	Gly	Gln	Arg	Val	Pro	Phe	Leu	Ser	Ala	Ala	Lys	Ile	Gly	625	630	635
Arg	Asp	Tyr	Ser	Phe	Phe	Thr	Asn	Ile	Glu	Thr	Asp	Gly	Gly	Leu	Leu	645	650	655
Ala	Ser	Leu	Asp	Ser	Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr	660	665	670
Leu	Ser	Tyr	Tyr	Val	Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala	675	680	685
Ala	Ala	His	Ser	Ala	Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly	690	695	700
Gly	Ser	Asn	Leu	Glu	Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser	705	710	715
Ser	Ala	Thr	Pro	Glu	Thr	Val	Glu	Thr	Ala	Ala	Ala	Asp	Arg	Thr	Asp	725	730	735
Met	Pro	Gly	Ile	Arg	Pro	Tyr	Gly	Ala	Thr	Phe	Arg	Ala	Ala	Ala	Ala	740	745	750
Val	Gln	His	Ala	Asn	Ala	Ala	Asp	Gly	Val	Arg	Ile	Phe	Asn	Ser	Leu	755	760	765
Ala	Ala	Thr	Val	Tyr	Ala	Asp	Ser	Thr	Ala	Ala	His	Ala	Asp	Met	Gln	770	775	780
Gly	Arg	Arg	Leu	Lys	Ala	Val	Ser	Asp	Gly	Leu	Asp	His	Asn	Ala	Thr	785	790	795
Gly	Leu	Arg	Val	Ile	Ala	Gln	Thr	Gln	Gln	Asp	Gly	Gly	Thr	Trp	Glu	805	810	815
Gln	Gly	Gly	Val	Glu	Gly	Lys	Met	Arg	Gly	Ser	Thr	Gln	Thr	Val	Gly	820	825	830
Ile	Ala	Ala	Lys	Thr	Gly	Glu	Asn	Thr	Thr	Ala	Ala	Ala	Thr	Leu	Gly	835	840	845
Met	Gly	His	Ser	Thr	Trp	Ser	Glu	Asn	Ser	Ala	Asn	Ala	Lys	Thr	Asp	850	855	860
Ser	Ile	Ser	Leu	Phe	Ala	Gly	Ile	Arg	His	Asp	Ala	Gly	Asp	Ile	Gly	865	870	875
Tyr	Leu	Lys	Gly	Leu	Phe	Ser	Tyr	Gly	Arg	Tyr	Lys	Asn	Ser	Ile	Ser	885	890	895
Arg	Ser	Thr	Gly	Ala	Asp	Glu	His	Ala	Glu	Gly	Ser	Val	Asn	Gly	Thr	900	905	910
Leu	Met	Gln	Leu	Gly	Ala	Leu	Gly	Gly	Val	Asn	Val	Pro	Phe	Ala	Ala	915	920	925
Thr	Gly	Asp	Leu	Thr	Val	Glu	Gly	Gly	Leu	Arg	Tyr	Asp	Leu	Leu	Lys	930	935	940



Gln Asp Ala Phe Ala Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn  
 945 955 960

Ser Leu Thr Glu Gly Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser  
 965 970 975

Gln Pro Leu Ser Asp Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu  
 980 985 990

Arg Asp Leu Asn Gly Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly  
 995 1000 1005

Ala Thr Ala Ala Thr Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr  
 1010 1015 1020

Arg Leu Val Ala Gly Leu Gly Ala Asp Val Glu Phe Gly Asn Gly Trp  
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Asn Gly Leu Ala Arg Tyr Ser Tyr Ala Gly Ser Lys Gln Tyr Gly Asn  
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His Ser Gly Arg Val Gly Val Gly Tyr Arg Phe  
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gca ggt tgc ggc tca atc aat aat gta acc gtt tcc gac cag aaa ctt 96  
 Ala Gly Cys Gly Ser Ile Asn Asn Val Thr Val Ser Asp Gln Lys Leu  
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cag gaa cgt gcc gcg ttt gcc ttg ggc gtc agc caa aat gcc gta aaa 144  
 Gln Glu Arg Ala Ala Phe Ala Leu Gly Val Ser Gln Asn Ala Val Lys  
 35 40 45

atc agc aac cgc agc aat gaa agc ata cgc atc aac ttt acc gca act 192  
 Ile Ser Asn Arg Ser Asn Glu Ser Ile Arg Ile Asn Phe Thr Ala Thr  
 50 55 60

gtg ggt aag cgc gtg agc caa tgc tat gtt acc agt gta atc agc aca 240  
 Val Gly Lys Arg Val Ser Gln Cys Tyr Val Thr Ser Val Ile Ser Thr  
 65 70 75 80

atc ggc gtt acc act tcc gat gca att tgt ttg gga ggc gga acg cac 288  
 Ile Gly Val Thr Thr Ser Asp Ala Ile Cys Leu Gly Gly Gly Thr His  
 85 90 95

aaa ggc aaa agt caa tgc aat gct ttg ctt aaa gcg gca ggc cgt tgc 336  
 Lys Gly Lys Ser Gln Cys Asn Ala Leu Leu Lys Ala Ala Gly Arg Cys  
 100 105 110

taa 339

09830433-081500



Ala	Val	Ser	Val	Gly	Thr	Val	Leu	Val	Ser	Val	Val	Ala	Gln	Leu	Asp	
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ggg	gcg	ggt	gcg	acg	acg	ttt	tta	ttg	gtc	gtc	ccc	gcc	ctt	ttg	ccg	384
Gly	Ala	Gly	Ala	Thr	Thr	Phe	Leu	Leu	Val	Val	Pro	Ala	Leu	Leu	Pro	
115							120					125				
ctt	tac	aag	cgt	ctg	cat	atg	aat	cct	tac	ctg	ctg	ttt	ttg	ctg	ctg	432
Leu	Tyr	Lys	Arg	Leu	His	Met	Asn	Pro	Tyr	Leu	Leu	Phe	Leu	Leu	Leu	
130						135					140					
act	tcc	agt	gcg	gga	ttg	att	aac	ctt	ctg	ccg	tgg	ggc	ggg	ccg	acc	480
Thr	Ser	Ser	Ala	Gly	Leu	Ile	Asn	Leu	Leu	Pro	Trp	Gly	Gly	Pro	Thr	
145					150					155					160	
ggg	cgg	gtt	gca	agc	gtg	ttg	ggc	gca	gat	gtg	ggc	gaa	ttg	tat	aaa	528
Gly	Arg	Val	Ala	Ser	Val	Leu	Gly	Ala	Asp	Val	Gly	Glu	Leu	Tyr	Lys	
				165					170					175		
cct	ttg	ttg	acg	gtg	caa	att	atc	ggt	gtg	gtg	ttt	atc	ctt	gcg	ctg	576
Pro	Leu	Leu	Thr	Val	Gln	Ile	Ile	Gly	Val	Val	Phe	Ile	Leu	Ala	Leu	
			180					185					190			
tcc	ctg	ctt	ttg	ggt	gtg	cgt	gaa	aaa	agg	cgg	att	gtc	cgg	gag	ttg	624
Ser	Leu	Leu	Leu	Gly	Val	Arg	Glu	Lys	Arg	Arg	Ile	Val	Arg	Glu	Leu	
		195					200					205				
ggc	gcg	ttg	ccc	gcc	gtg	gcg	gat	ttg	ata	aag	ccg	gtg	cct	ttg	tcg	672
Gly	Ala	Leu	Pro	Ala	Val	Ala	Asp	Leu	Ile	Lys	Pro	Val	Pro	Leu	Ser	
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gaa	gaa	gaa	caa	aaa	ttg	gcg	cgt	ccg	aaa	ctg	ttt	tgg	tgg	aat	gtc	720
Glu	Glu	Glu	Gln	Lys	Leu	Ala	Arg	Pro	Lys	Leu	Phe	Trp	Trp	Asn	Val	
225					230				235						240	
ctg	ctg	ttt	ttg	gcg	gcg	atg	agc	ctg	ctt	ttt	tcg	ggc	atc	ttc	ccg	768
Leu	Leu	Phe	Leu	Ala	Ala	Met	Ser	Leu	Leu	Phe	Ser	Gly	Ile	Phe	Pro	
				245					250					255		
ccg	ggt	tat	gta	ttt	atg	ctg	gct	gca	acg	gcg	gcg	ttg	ctt	ttg	aat	816
Pro	Gly	Tyr	Val	Phe	Met	Leu	Ala	Ala	Thr	Ala	Ala	Leu	Leu	Leu	Asn	
			260					265					270			
tac	cgc	agc	ccg	cag	gaa	cag	atg	gag	cgg	att	tat	gcc	cac	gcc	ggc	864
Tyr	Arg	Ser	Pro	Gln	Glu	Gln	Met	Glu	Arg	Ile	Tyr	Ala	His	Ala	Gly	
		275					280					285				
ggc	gcg	gtg	atg	atg	gcg	tcc	att	att	ttg	gcg	gca	ggt	acg	ttt	ttg	912
Gly	Ala	Val	Met	Met	Ala	Ser	Ile	Ile	Leu	Ala	Ala	Gly	Thr	Phe	Leu	
	290					295					300					
ggg	att	ttg	aag	ggt	gcg	ggg	atg	ttg	gac	gcg	att	tcc	aaa	gac	att	960
Gly	Ile	Leu														

384

gtg gcg ccc gaa gca. ggt tat gcg atg ttg atc ggc agc ttc gtc 1152  
 Val Ala Pro Glu Ala Gly Tyr Ala Met Leu Ile Gly Ser Ile Val  
 370 375 380

ggc act ttt gtt acg ccg ctt tcg ccg gct ttg tgg atg ggc ttg ggt 1200  
 Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly  
 385 390 395 400

ttg gcg aaa ttg tcg atg ggc aaa cac atc cgt tat tcg ttt ttt tgg 1248  
 Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp  
 405 410 415

gcg tgg ggt ttg tcg ctg gcg ata ttg gcc agt tcg ata gcg gca gga 1296  
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 420 425 430

atc gtg cct ctg ccg taa 1314  
 Ile Val Pro Leu Pro  
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 20 25 30

Leu Phe Gly Ala Leu Leu Ala Gly Phe Asp Val Ser Gln Leu Lys Glu  
 35 40 45

Phe Tyr Ser Gly Gly Thr Lys Ser Val Met Gln Ile Val Ile Met Phe  
 50 55 60

Met Phe Ser Ile Leu Phe Phe Gly Ile Met Asn Asp Val Gly Leu Phe  
 65 70 75 80

Arg Pro Met Ile Gly Gly Leu Ile Lys Leu Thr Arg Gly Asn Ile Val  
 85 90 95

Ala Val Ser Val Gly Thr Val Leu Val Ser Val Val Ala Gln Leu Asp  
 100 105 110

Gly Ala Gly Ala Thr Thr Phe Leu Leu Val Val Pro Ala Leu Leu Pro  
 115 120 125

Leu Tyr Lys Arg Leu His Met Asn Pro Tyr Leu Leu Phe Leu Leu Leu  
 130 135 140

Thr Ser Ser Ala Gly Leu Ile Asn Leu Leu Pro Trp Gly Gly Pro Thr  
 145 150 155 160

Gly Arg Val Ala Ser Val Leu Gly Ala Asp Val Gly Glu Leu Tyr Lys  
 165 170 175

Pro Leu Leu Thr Val Gln Ile Ile Gly Val Val Phe Ile Leu Ala Leu  
 180 185 190

Ser Leu Leu Leu Gly Val Arg Glu Lys Arg Arg Ile Val Arg Glu Leu  
 195 200 205

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098043 0340E360

Gly Ala Leu Pro Ala Ala Asp Leu Ile Lys Pro Val P Leu Ser  
 210 215 220

Glu Glu Glu Gln Lys Leu Ala Arg Pro Lys Leu Phe Trp Trp Asn Val  
 225 230 235 240

Leu Leu Phe Leu Ala Ala Met Ser Leu Leu Phe Ser Gly Ile Phe Pro  
 245 250 255

Pro Gly Tyr Val Phe Met Leu Ala Ala Thr Ala Ala Leu Leu Leu Asn  
 260 265 270

Tyr Arg Ser Pro Gln Glu Gln Met Glu Arg Ile Tyr Ala His Ala Gly  
 275 280 285

Gly Ala Val Met Met Ala Ser Ile Ile Leu Ala Ala Gly Thr Phe Leu  
 290 295 300

Gly Ile Leu Lys Gly Ala Gly Met Leu Asp Ala Ile Ser Lys Asp Ile  
 305 310 315 320

Val His Ile Leu Pro Asp Ala Leu Leu Pro Tyr Leu His Ile Ala Ile  
 325 330 335

Gly Val Leu Gly Ile Pro Leu Glu Leu Val Leu Ser Thr Asp Ala Tyr  
 340 345 350

Tyr Phe Gly Leu Phe Pro Ile Val Glu Gln Ile Thr Ser Gln Ala Gly  
 355 360 365

Val Ala Pro Glu Ala Ala Gly Tyr Ala Met Leu Ile Gly Ser Ile Val  
 370 375 380

Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly  
 385 390 395 400

Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp  
 405 410 415

Ala Trp Gly Leu Ser Leu Ala Ile Leu Ala Ser Ser Ile Ala Ala Gly  
 420 425 430

Ile Val Pro Leu Pro  
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 Met Gly Ile His Leu Asp Phe Gly Ile Ser Pro Lys Thr Phe Arg Gln  
 1 5 10 15

act tat ctg tat caa aag ccc aag ctc ttt aaa gga gcg gtt cgg aat 96  
 Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Arg Asn  
 20 25 30

ctc gaa gcc gca tct tgt aaa tat atc aac gag ata tac caa cga gca	144
Leu Glu Ala Ala Ser. Lys Tyr Ile Asn Glu Ile Tyr Glu Arg Ala	
35 40 45	
gac cca acc gca ccg ctg ttt cat ctg cgt aaa aaa ggc gca atc gtt	192
Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val	
50 55 60	
cct aaa gaa gaa tac gtc gaa agt ttc gac gat ttg ggc aaa act cgc	240
Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg	
65 70 75 80	
tac cgt ttt att aaa tcc gtt atc tac gaa cat atg aag aat ggt gcg	288
Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala	
85 90 95	
tcg tta gtc tat aac cat att aac aac gag ccg ttt tca gac cat atc	336
Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile	
100 105 110	
gcc cgt caa gtc gcc cgc ttt gcc ggc gca cat act att gtt agt gga	384
Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly	
115 120 125	
tat ctt gct ttt ggc agc gac gaa tct tat aaa aac cat tgg gat acc	432
Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr	
130 135 140	
cgc gat gtg tat gcc atc cag ctt ttc ggc aag aaa cgt tgg caa ctt	480
Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu	
145 150 155 160	
act gcc cct gat ttc cct atg cca ttg tat atg caa cag act aaa gat	528
Thr Ala Pro Asp Phe Pro Met Pro Leu Tyr Met Gln Gln Thr Lys Asp	
165 170 175	
act gat att tcc att cct gaa cat atc gat atg gat att atc ctt gaa	576
Thr Asp Ile Ser Ile Pro Glu His Ile Asp Met Asp Ile Ile Leu Glu	
180 185 190	
gca ggt gat gtc ctc tac atc cca cgc ggt tgg tgg cac aga cct atc	624
Ala Gly Asp Val Leu Tyr Ile Pro Arg Gly Trp Trp His Arg Pro Ile	
195 200 205	
ccg ctc ggc tgt gaa acc ttc cac ttc gct gtc ggt acc ttc ccg ccc	672
Pro Leu Gly Cys Glu Thr Phe His Phe Ala Val Gly Thr Phe Pro Pro	
210 215 220	
aac ggc tat aat tac ctc gag tgg cta atg aag aaa ttc ccc acg ata	720
Asn Gly Tyr Asn Tyr Leu Glu Trp Leu Met Lys Lys Phe Pro Thr Ile	
225 230 235 240	
gaa agt ctg cgc cac agt ttc tca gac tgg gag caa gat agg acg cgt	768
Glu Ser Leu Arg His Ser Phe Ser Asp Trp Glu Gln Asp Arg Thr Arg	
245 250 255	
atc aac gat act gcc gca caa att gct gcc atg att gcc gac ccc gtc	816
Ile Asn Asp Thr Ala Ala Gln Ile Ala Ala Met Ile Ala Asp Pro Val	
260 265 270	
aat tac gaa gcc ttc agt gaa gac ttc ctc ggc aaa gaa cgc acc gat	864
Asn Tyr Glu Ala Phe Ser Glu Asp Phe Leu Gly Lys Glu Arg Thr Asp	
275 280 285	
acc gct ttt cat ctc gaa cag ttc gcg aat ccc aac gct act ccg ctt	912
Thr Ala Phe His Leu Glu Gln Phe Ala Asn Pro Asn Ala Thr Pro Leu	

290	295	300	
tca gac gac gtc agg	aga cta aat gcc aat aat ttg ga	cg ttg	960
Ser Asp Asp Val Arg	Leu Arg Leu Asn Ala Asn Asn Leu Asp Thr Leu		
305	310	315	320
gaa aag gga tat ttg att ggg aat ggg atg aag ata agc gta gat gaa			1008
Glu Lys Gly Tyr Leu Ile Gly Asn Gly Met Lys Ile Ser Val Asp Glu			
	325	330	335
ttg ggg aaa aaa gtg tta gaa cac atc ggt aag aat gaa ccg tta ttg			1056
Leu Gly Lys Lys Val Leu Glu His Ile Gly Lys Asn Glu Pro Leu Leu			
	340	345	350
ttg aaa aat cta ctg gtt aac ttc aat cag gga aaa cat gaa gaa gtt			1104
Leu Lys Asn Leu Leu Val Asn Phe Asn Gln Gly Lys His Glu Glu Val			
	355	360	365
agg aag ttg att tat cag ttg ata gag tta gat ttt ctg gaa ctt ttg			1152
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Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Arg Asn			
	20	25	30
Leu Glu Ala Ala Ser Cys Lys Tyr Ile Asn Glu Ile Tyr Gln Arg Ala			
	35	40	45
Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val			
	50	55	60
Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg			
	65	70	75
Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala			
	85	90	95
Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile			
	100	105	110
Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly			
	115	120	125
Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr			
	130	135	140
Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu			
	145	150	155
Thr Ala Pro Asp Phe Pro Met Pro Leu Tyr Met Gln Gln Thr Lys Asp			
	165	170	175
Thr Asp Ile Ser Ile Pro Glu His Ile Asp Met Asp Ile Ile Leu Glu			
	180	185	190

0930433 061601

Ala Gly Asp Val Leu. Ile Pro Arg Gly Trp Trp His Arg Pro Ile  
195 200 205

Pro Leu Gly Cys Glu Thr Phe His Phe Ala Val Gly Thr Phe Pro Pro  
210 215 220

Asn Gly Tyr Asn Tyr Leu Glu Trp Leu Met Lys Lys Phe Pro Thr Ile  
225 230 235 240

Glu Ser Leu Arg His Ser Phe Ser Asp Trp Glu Gln Asp Arg Thr Arg  
245 250 255

Ile Asn Asp Thr Ala Ala Gln Ile Ala Ala Met Ile Ala Asp Pro Val  
260 265 270

Asn Tyr Glu Ala Phe Ser Glu Asp Phe Leu Gly Lys Glu Arg Thr Asp  
275 280 285

Thr Ala Phe His Leu Glu Gln Phe Ala Asn Pro Asn Ala Thr Pro Leu  
290 295 300

Ser Asp Asp Val Arg Leu Arg Leu Asn Ala Asn Asn Leu Asp Thr Leu  
305 310 315 320

Glu Lys Gly Tyr Leu Ile Gly Asn Gly Met Lys Ile Ser Val Asp Glu  
325 330 335

Leu Gly Lys Lys Val Leu Glu His Ile Gly Lys Asn Glu Pro Leu Leu  
340 345 350

Leu Lys Asn Leu Leu Val Asn Phe Asn Gln Gly Lys His Glu Glu Val  
355 360 365

Arg Lys Leu Ile Tyr Gln Leu Ile Glu Leu Asp Phe Leu Glu Leu Leu  
370 375 380

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cgc caa acc agc ctg acg ggt aaa gtg att ctg aca cga ccg ttg tca 96  
Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser  
20 25 30

ttt tcc cta tgg acg aca ttt gca tcg ata tct gcg tta ttg att atc 144  
Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile  
35 40 45

ctg ttt ttg ata ttt ggt aac tat acg cga aag aca aca gtg gag gga 192  
Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly  
50 55 60

caa att tta cct gca tcg ggc gta atc agg gtg tat gca ccg gat acg 240



Gln 65	Ile	Leu	Pro	Ala	Ser	Gly	Val	Ile	Arg	Val 75	Tyr	Ala	Pro	Asp	Thr 80	
ggg Gly	aca Thr	att Ile	aca Thr	gcg Ala 85	aaa Lys	ttc Phe	gtg Val	gaa Glu	gat Asp 90	gga Gly	gaa Glu	aag Lys	gtt Val	aag Lys 95	gct Ala	288
ggc Gly	gac Asp	aag Lys	cta Leu 100	ttt Phe	gcg Ala	ctt Leu	tcg Ser 105	acc Thr	tca Ser	cgt Arg	ttc Phe	ggc Gly 110	gca Ala	gga Gly	gat Asp	336
agc Ser	gtg Val	cag Gln 115	cag Gln	cag Gln	ttg Leu	aaa Lys	acg Thr 120	gag Glu	gca Ala	gtt Val	ttg Leu	aag Lys 125	aaa Lys	acg Thr	ttg Leu	384
gca Ala 130	gaa Glu	cag Gln	gaa Glu	ctg Leu	ggt Gly	cgt Arg 135	ctg Leu	aag Lys	ctg Leu	ata Ile	cac His 140	ggg Gly	aat Asn	gaa Glu	acg Thr	432
cgc Arg 145	agc Ser	ctt Leu	aaa Lys	gca Ala 150	act Thr	gtc Val	gaa Glu	cgt Arg	ttg Leu	gaa Glu 155	aac Asn	cag Gln	aaa Lys	ctc Leu 160	cat His	480
att Ile	tcg Ser	caa Gln	cag Gln 165	ata Ile	gac Asp	ggt Gly	cag Gln	aaa Lys 170	agg Arg	cgc Arg	att Ile	aga Arg	ctt Leu 175	gcg Ala	gaa Glu	528
gaa Glu	atg Met	ttg Leu	cag Gln 180	aaa Lys	tat Tyr	cgt Arg	ttc Phe 185	cta Leu	tcc Ser	gcc Ala	aat Asn	gat Asp 190	gca Ala	gtg Val	cca Pro	576
aaa Lys	caa Gln 195	gaa Glu	atg Met	atg Met	aat Asn	gtc Val 200	aag Lys	gca Ala	gag Glu	ctt Leu	tta Leu 205	gag Glu	cag Gln	aaa Lys	gcc Ala	624
aaa Lys 210	ctt Leu	gat Asp	gcc Ala	tac Tyr	cgc Arg	cga Arg 215	gaa Glu	gaa Glu	gtc Val	ggg Gly 220	ctg Leu	ctt Leu	cag Gln	gaa Glu	atc Ile	672
cgc Arg 225	acg Thr	cag Gln	aat Asn	ctg Leu 230	aca Thr	ttg Leu 235	gcc Ala	agc Ser	ctc Leu	ccc Pro	caa Gln	gcg Ala	gca Ala	tga		717

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<212> PRT
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Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser
      20          25          30

Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile
      35          40          45

Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly
  50          55          60

Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr
  65          70          75          80

Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala

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Gly Asp Lys Leu Phe Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp  
 100 105 110

Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu  
 115 120 125

Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr  
 130 135 140

Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Lys Leu His  
 145 150 155 160

Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu  
 165 170 175

Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro  
 180 185 190

Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala  
 195 200 205

Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile  
 210 215 220

Arg Thr Gln Asn Leu Thr Leu Ala Ser Leu Pro Gln Ala Ala  
 225 230 235

&lt;210&gt; 17

&lt;211&gt; 690

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(687)

&lt;400&gt; 17

atg atg aat gtc gag gca gag ctt tta gag cag aaa gcc aaa ctt gat 48  
 Met Met Asn Val Glu Ala Glu Leu Leu Glu Gln Lys Ala Lys Leu Asp  
 1 5 10 15

gcc tac ggc cga gaa gaa gcc ggg ctg ctt cag gaa atc cgc acg cag 96  
 Ala Tyr Gly Arg Glu Glu Ala Gly Leu Leu Gln Glu Ile Arg Thr Gln  
 20 25 30

aat ctg aca ttg gcc agc ctc ccc aaa cgg cat gag aca gaa caa agc 144  
 Asn Leu Thr Leu Ala Ser Leu Pro Lys Arg His Glu Thr Glu Gln Ser  
 35 40 45

cag ctt gaa cgc acc atg gcc gat att tct caa gaa gtt ttg gat ttt 192  
 Gln Leu Glu Arg Thr Met Ala Asp Ile Ser Gln Glu Val Leu Asp Phe  
 50 55 60

gaa atg cgc tct gaa caa atc atc cgt gca gga cgg tcg ggt tat ata 240  
 Glu Met Arg Ser Glu Gln Ile Ile Arg Ala Gly Arg Ser Gly Tyr Ile  
 65 70 75 80

gca ata ccg aac gtc gaa gtc gga cag cag gtt gat cct tcc aaa ctg 288  
 Ala Ile Pro Asn Val Glu Val Gly Gln Gln Val Asp Pro Ser Lys Leu  
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<213> Neisseria meningitidis
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 145 150 155 160  
 Gly Leu Gly Met Val Ser Ser Asp Leu Ala Lys Ser Asn Glu Pro Val  
 165 170 175  
 Tyr Leu Val Lys Ile Lys Pro Asp Lys Pro Thr Ile Thr Ala Tyr Gly  
 180 185 190  
 Glu Glu Lys Pro Leu Gln Ile Gly Met Thr Leu Glu Ala Asp Ile Leu  
 195 200 205  
 His Glu Lys Arg Arg Leu Tyr Glu Trp Val Leu Glu Leu Ile Tyr Ser  
 210 215 220  
 Met Ser Gly Lys Leu  
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 <212> DNA  
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 <222> (1)..(1740)

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 1 5 10 15  
 . ccc ctt aaa acc tta gct gcc gat gaa aac gat gca gaa ctt atc cgt 96  
 Pro Leu Lys Thr Leu Ala Ala Asp Glu Asn Asp Ala Glu Leu Ile Arg  
 20 25 30  
 tcc atg cag cgt cag cag cac ata gat gct gaa ttg tta act gat gca 144  
 Ser Met Gln Arg Gln Gln His Ile Asp Ala Glu Leu Thr Asp Ala  
 35 40 45  
 aat gtc cgt ttc gag caa cca ttg gag aag aac aat tat gtc ctg agt 192  
 Asn Val Arg Phe Glu Gln Pro Leu Glu Lys Asn Asn Tyr Val Leu Ser  
 50 55 60  
 gaa gat gaa aca ccg tgt act cgg gta aat tac att agt tta gat gat 240  
 Glu Asp Glu Thr Pro Cys Thr Arg Val Asn Tyr Ile Ser Leu Asp Asp  
 65 70 75 80  
 aag acg gcg cgc aaa ttt tct ttt ctt cct tct gtg ctc atg aaa gaa 288  
 Lys Thr Ala Arg Lys Phe Ser Phe Leu Pro Ser Val Leu Met Lys Glu  
 85 90 95  
 aca gct ttt aaa act ggg atg tgt tta ggt tcc aat aat ttg agc agg 336  
 Thr Ala Phe Lys Thr Gly Met Cys Leu Gly Ser Asn Asn Leu Ser Arg  
 100 105 110  
 cta caa aaa gcc gcg caa cag ata ctg att gtg cgt ggc tac ctc act 384  
 Leu Gln Lys Ala Ala Gln Gln Ile Leu Ile Val Arg Gly Tyr Leu Thr  
 115 120 125  
 tcc caa gct att atc caa cca cag aat atg gat tcg gga att ctg aaa 432

TGGTGG "EEHDEBGO

Ser	Gln	Ala	Ile	Ile	Gln	Pro	Gln	Asn	Met	Asp	Ser	Gly	Ile	Leu	Lys	
130					135						140					
tta	cgg	gta	tca	gca	ggc	gaa	atc	agg	gat	atc	cgc	tat	gaa	gaa	aaa	480
Leu	Arg	Val	Ser	Ala	Gly	Glu	Ile	Arg	Asp	Ile	Arg	Tyr	Glu	Glu	Lys	
145					150					155					160	
cgg	gat	gcg	aag	tct	gcc	gag	ggc	agt	att	agt	gca	ttc	aat	aac	aaa	528
Arg	Asp	Ala	Lys	Ser	Ala	Glu	Gly	Ser	Ile	Ser	Ala	Phe	Asn	Asn	Lys	
				165					170					175		
ctt	ccc	tta	tat	agg	aac	aaa	att	ctc	aat	ctt	cgc	gat	gta	gag	cag	576
Leu	Pro	Leu	Tyr	Arg	Asn	Lys	Ile	Leu	Asn	Leu	Arg	Asp	Val	Glu	Gln	
			180					185					190			
ggc	ttg	gaa	aac	ctg	cgt	cgt	ttg	ccg	agt	gtt	aaa	aca	gat	att	cag	624
Gly	Leu	Glu	Asn	Leu	Arg	Arg	Leu	Pro	Ser	Val	Lys	Thr	Asp	Ile	Gln	
		195					200					205				
att	ata	ccg	tcc	gaa	gaa	gaa	ggc	aaa	agc	gat	tta	cag	atc	aaa	tgg	672
Ile	Ile	Pro	Ser	Glu	Glu	Glu	Gly	Lys	Ser	Asp	Leu	Gln	Ile	Lys	Trp	
	210					215					220					
cag	cag	aat	aaa	ccc	ata	cgg	ttc	agt	atc	ggt	ata	gat	gat	gcg	ggc	720
Gln	Gln	Asn	Lys	Pro	Ile	Arg	Phe	Ser	Ile	Gly	Ile	Asp	Asp	Ala	Gly	
225					230					235					240	
ggc	aaa	acg	acc	ggc	aaa	tat	caa	gga	aat	gtc	gct	tta	tcg	tcc	gat	768
Gly	Lys	Thr	Thr	Gly	Lys	Tyr	Gln	Gly	Asn	Val	Ala	Leu	Ser	Ser	Asp	
				245					250					255		
aac	cct	ttg	ggc	tta	agc	gat	tcg	ttt	tat	gtt	tca	tat	gga	cgc	ggt	816
Asn	Pro	Leu	Gly	Leu	Ser	Asp	Ser	Phe	Tyr	Val	Ser	Tyr	Gly	Arg	Gly	
			260					265					270			
ttg	gtg	cac	aaa	acg	gac	ttg	act	gct	gcc	acc	ggt	acg	gaa	act	gaa	864
Leu	Val	His	Lys	Thr	Asp	Leu	Thr	Ala	Ala	Thr	Gly	Thr	Glu	Thr	Glu	
		275					280					285				
agc	gga	tcc	aga	agt	tac	agc	gtg	cat	tat	tcg	gtg	ccc	gta	aaa	aaa	912
Ser	Gly	Ser	Arg	Ser	Tyr	Ser	Val	His	Tyr	Ser	Val	Pro	Val	Lys	Lys	
	290					295					300					
tgg	ctg	ttt	tct	ttt	aat	cac	aat	gga	cat	cgt	tac	cac	gaa	gca	acc	960
Trp	Leu	Phe	Ser	Phe	Asn	His	Asn	Gly	His	Arg	Tyr	His	Glu	Ala	Thr	
305					310					315					320	
gaa	ggc	tat	tcc	gtc	aat	tac	gat	tac	aac	ggc	aaa	caa	tat	cag	agc	1008
Glu	Gly	Tyr	Ser	Val	Asn	Tyr	Asp	Tyr	Asn	Gly	Lys	Gln	Tyr	Gln	Ser	
				325					330					335		
agc	ctg	gcc	gcc	gag	cgc	atg	ctt	tgg	ccc	ccc	agc	ttt	cct	caa	act	1056
Ser	Leu	Ala	Ala	Glu	Arg	Met	Leu	Trp	Pro	Pro	Ser	Phe	Pro			

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Leu Ser Tyr Lys Arg Thr Gly Met Arg Gln Ser Met Pro Ala Pro	
405 410 415	
gaa gaa aac ggc ggc ggt act att cca gcc aca tcc cgt atg aaa atc	1296
Glu Glu Asn Gly Gly Gly Thr Ile Pro Ala Thr Ser Arg Met Lys Ile	
420 425 430	
ata acc gcc gga ttg gat gca gcg gcc ccg tct atg ttg ggc aaa cag	1344
Ile Thr Ala Gly Leu Asp Ala Ala Pro Ser Met Leu Gly Lys Gln	
435 440 445	
cag ttt ttc tac gca acc gcc att caa gct caa tgg aac aaa acg cct	1392
Gln Phe Phe Tyr Ala Thr Ala Ile Gln Ala Gln Trp Asn Lys Thr Pro	
450 455 460	
ttg gtt gcc caa gac aag ttg tct atc ggc agc cgc tac acc gtt cgc	1440
Leu Val Ala Gln Asp Lys Leu Ser Ile Gly Ser Arg Tyr Thr Val Arg	
465 470 475 480	
gga ttt gat ggg gag cag agt ctt ttc gga gag cga ggt ttc tac tgg	1488
Gly Phe Asp Gly Glu Gln Ser Leu Phe Gly Glu Arg Gly Phe Tyr Trp	
485 490 495	
cag aat act tta act tgg tat ttt cat ccg aac cat cag ttc tat ctc	1536
Gln Asn Thr Leu Thr Trp Tyr Phe His Pro Asn His Gln Phe Tyr Leu	
500 505 510	
ggt gcg gac tat ggc cgc gta tct ggc gaa agt gca caa tat gta tcg	1584
Gly Ala Asp Tyr Gly Arg Val Ser Gly Glu Ser Ala Gln Tyr Val Ser	
515 520 525	
ggc aag cag ctg atg ggt gca gtg gtc ggc ttc aga gga ggg cat aaa	1632
Gly Lys Gln Leu Met Gly Ala Val Val Gly Phe Arg Gly Gly His Lys	
530 535 540	
gta ggc ggt atg ttt gct tat gat ctg ttt gcc ggc aag ccg ctt cat	1680
Val Gly Gly Met Phe Ala Tyr Asp Leu Phe Ala Gly Lys Pro Leu His	
545 550 555 560	
aaa ccc aaa ggc ttt cag acg acc aac acc gtt tac ggc ttc aac ttg	1728
Lys Pro Lys Gly Phe Gln Thr Thr Asn Thr Val Tyr Gly Phe Asn Leu	
565 570 575	
aat tac agt ttc taa	1743
Asn Tyr Ser Phe	
580	

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<212> PRT

<213> Neisseria meningitidis

<400> 20

Met Lys Phe Phe Pro Ala Pro Cys Leu Leu Val Ile Leu Ala Val Ile  
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Pro Leu Lys Thr Leu Ala Ala Asp Glu Asn Asp Ala Glu Leu Ile Arg  
20 25 30

Ser Met Gln Arg Gln Gln His Ile Asp Ala Glu Leu Leu Thr Asp Ala  
35 40 45

Asn Val Arg Phe Glu Gln Pro Leu Glu Lys Asn Asn Tyr Val Leu Ser

60

**03-07-1986**

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<213> Neisseria meningitidis
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Met	Ile	Glu	Phe	Val	Arg	Ala	Lys	Lys	Arg	Leu	Leu	Trp	Ala	Phe	Val	
1				5				10						15		
ctt	ttg	ctt	gtg	tgg	acg	tgc	ggt	tac	cga	tac	gcc	gcc	gac	aag	gcc	96
Leu	Leu	Leu	Val	Trp	Thr	Cys	Gly	Tyr	Arg	Tyr	Ala	Ala	Asp	Lys	Ala	
			20				25						30			
gaa	gcg	aaa	caa	acc	gcc	ctg	att	gcc	acc	tat	cgg	cat	tct	tct	atg	144
Glu	Ala	Lys	Gln	Thr	Ala	Leu	Ile	Ala	Thr	Tyr	Arg	His	Ser	Ser	Met	
		35				40						45				
gtt	gcg	gcg	gaa	caa	tac	gcc	ttg	cag	ctt	aaa	aaa	gcg	cag	gac	gaa	192
Val	Ala	Ala	Glu	Gln	Tyr	Ala	Leu	Gln	Leu	Lys	Lys	Ala	Gln	Asp	Glu	
50						55						60				
agg	cag	cgg	tgg	tac	gac	ttt	tcc	caa	aaa	caa	gga	aga	aag	ccc	gtg	240
Arg	Gln	Arg	Trp	Tyr	Asp	Phe	Ser	Gln	Lys	Gln	Gly	Arg	Lys	Pro	Val	
65				70						75				80		



aaa aaa cag tat ccg caa acg aaa aaa gcc ggc tat c aa acc 288  
 Lys Lys Gln Tyr Pro Gln Thr Lys Lys Ala Gly Tyr Leu Lys Thr  
 85 90 95  
 aag gaa gaa ctg ctt gcg gaa ttg gct tgc ctt aaa gcg gaa atg gct 336  
 Lys Glu Glu Leu Leu Ala Glu Leu Ala Cys Leu Lys Ala Glu Met Ala  
 100 105 110  
 gcc cta aaa aag ctc gat gcc tta atc tat ggg aaa gaa gtg cgg cag 384  
 Ala Leu Lys Lys Leu Asp Ala Leu Ile Tyr Gly Lys Glu Val Arg Gln  
 115 120 125  
 aaa gaa cgc aac tcg tcg cag ggt taa 411  
 Lys Glu Arg Asn Ser Ser Gln Gly  
 130 135

<210> 22  
 <211> 136  
 <212> PRT  
 <213> Neisseria meningitidis

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 Glu Ala Lys Gln Thr Ala Leu Ile Ala Thr Tyr Arg His Ser Ser Met  
 35 40 45  
 Val Ala Ala Glu Gln Tyr Ala Leu Gln Leu Lys Lys Ala Gln Asp Glu  
 50 55 60  
 Arg Gln Arg Trp Tyr Asp Phe Ser Gln Lys Gln Gly Arg Lys Pro Val  
 65 70 75 80  
 Lys Lys Gln Tyr Pro Pro Gln Thr Lys Lys Ala Gly Tyr Leu Lys Thr  
 85 90 95  
 Lys Glu Glu Leu Leu Ala Glu Leu Ala Cys Leu Lys Ala Glu Met Ala  
 100 105 110  
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 115 120 125  
 Lys Glu Arg Asn Ser Ser Gln Gly  
 130 135

<210> 23  
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 <212> DNA  
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093013 0450  
 109720 000000

aat aat ttc ggg' ttt, [REDACTED] cgc ctg ccg ctt aat ttt atg cc [REDACTED] t gaa	96
Asn Asn Phe Gly Phe [REDACTED] Arg Leu Pro Leu Asn Phe Met Pro Tyr Glu	
20 25 30	
agt cat gcc gat tgg gtt att acc ggc gtg cct tat gat atg gcg gtt	144
Ser His Ala Asp Trp Val Ile Thr Gly Val Pro Tyr Asp Met Ala Val	
35 40 45	
tca ggg cgt tcc ggc gcg cgt ttc ggt cct gaa gcc atc cgg cgc gcc	192
Ser Gly Arg Ser Gly Ala Arg Phe Gly Pro Glu Ala Ile Arg Arg Ala	
50 55 60	
tcc gtc aac ctc gct tgg gag cac cgc agg ttt cca tgg aca ttt gat	240
Ser Val Asn Leu Ala Trp Glu His Arg Arg Phe Pro Trp Thr Phe Asp	
65 70 75 80	
gtg cgc gaa cgc ctg aac att att gat tgc ggc gac ttg gtt ttt tct	288
Val Arg Glu Arg Leu Asn Ile Ile Asp Cys Gly Asp Leu Val Phe Ser	
85 90 95	
ttt ggc gac agc agg gat ttt gtc gaa aaa atg gaa gcg cac gcc ggc	336
Phe Gly Asp Ser Arg Asp Phe Val Glu Lys Met Glu Ala His Ala Gly	
100 105 110	
aaa tta ctt tct tcc ggc aaa cgc tgt ttg agt ttg ggc ggc gac cat	384
Lys Leu Leu Ser Ser Gly Lys Arg Cys Leu Ser Leu Gly Gly Asp His	
115 120 125	
ttc att acc ctc ccg ttg ttg cgc gcc cac gcc cgc tat ttc ggc aaa	432
Phe Ile Thr Leu Pro Leu Leu Arg Ala His Ala Arg Tyr Phe Gly Lys	
130 135 140	
ctc gca ctg att cat ttt gac gcg cac acc gac acc tac gac aac ggc	480
Leu Ala Leu Ile His Phe Asp Ala His Thr Asp Thr Tyr Asp Asn Gly	
145 150 155 160	
agc gaa tac gac cac ggt acg atg ttc tat acc gcc ccc aag gaa ggc	528
Ser Glu Tyr Asp His Gly Thr Met Phe Tyr Thr Ala Pro Lys Glu Gly	
165 170 175	
ctc atc gac ccg tcc cgt tcc gta caa atc ggc ata cgt acc gaa cac	576
Leu Ile Asp Pro Ser Arg Ser Val Gln Ile Gly Ile Arg Thr Glu His	
180 185 190	
agt aaa aaa ttg cct ttt act gtg ttg acc gcc ccc caa gtt aat gaa	624
Ser Lys Lys Leu Pro Phe Thr Val Leu Thr Ala Pro Gln Val Asn Glu	
195 200 205	
gac agt gtt gaa gag acc gtc cgt aaa atc aaa gaa acc gtc ggc aat	672
Asp Ser Val Glu Glu Thr Val Arg Lys Ile Lys Glu Thr Val Gly Asn	
210 215 220	
atg ccc gtt tac ctg act ttc gac ata gac tgc ctc gac ccg tcg ttc	720
Met Pro Val Tyr Leu Thr Phe Asp Ile Asp Cys Leu Asp Pro Ser Phe	
225 230 235 240	
gcc ccc ggg acc ggt acg ccc gta tgc ggc ggc ttg agc agc gac agg	768
Ala Pro Gly Thr Gly Thr Pro Val Cys Gly Gly Leu Ser Ser Asp Arg	
245 250 255	
gca tta aaa atc cta cgt ggg ctg acg gat ctc gac atc gtc ggt atg	816
Ala Leu Lys Ile Leu Arg Gly Leu Thr Asp Leu Asp Ile Val Gly Met	
260 265 270	
gat gtt gta gaa gtt gcc ccc tct tac gac caa tcc gac att acc gct	864

093043 031604

Asp Val Val Glu Val Ala Pro Ser Tyr Asp Gln Ser Asp Ile Thr Ala  
 275 . . . 280 285

ttg gcc ggc gcc aca att gcc ttg gaa atg ctt tac ctt caa ggt gcg 912  
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 Lys Lys Asp  
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 <211> 307  
 <212> PRT  
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Asn Asn Phe Gly Phe Leu Arg Leu Pro Leu Asn Phe Met Pro Tyr Glu  
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Ser His Ala Asp Trp Val Ile Thr Gly Val Pro Tyr Asp Met Ala Val  
 35 40 45

Ser Gly Arg Ser Gly Ala Arg Phe Gly Pro Glu Ala Ile Arg Arg Ala  
 50 55 60

Ser Val Asn Leu Ala Trp Glu His Arg Arg Phe Pro Trp Thr Phe Asp  
 65 70 75 80

Val Arg Glu Arg Leu Asn Ile Ile Asp Cys Gly Asp Leu Val Phe Ser  
 85 90 95

Phe Gly Asp Ser Arg Asp Phe Val Glu Lys Met Glu Ala His Ala Gly  
 100 105 110

Lys Leu Leu Ser Ser Gly Lys Arg Cys Leu Ser Leu Gly Gly Asp His  
 115 120 125

Phe Ile Thr Leu Pro Leu Leu Arg Ala His Ala Arg Tyr Phe Gly Lys  
 130 135 140

Leu Ala Leu Ile His Phe Asp Ala His Thr Asp Thr Tyr Asp Asn Gly  
 145 150 155 160

Ser Glu Tyr Asp His Gly Thr Met Phe Tyr Thr Ala Pro Lys Glu Gly  
 165 170 175

Leu Ile Asp Pro Ser Arg Ser Val Gln Ile Gly Ile Arg Thr Glu His  
 180 185 190

Ser Lys Lys Leu Pro Phe Thr Val Leu Thr Ala Pro Gln Val Asn Glu  
 195 200 205

Asp Ser Val Glu Glu Thr Val Arg Lys Ile Lys Glu Thr Val Gly Asn  
 210 215 220

Met Pro Val Tyr Leu Thr Phe Asp Ile Asp Cys Leu Asp Pro Ser Phe  
 225 230 235 240

Ala Pro Gly Thr Gly Thr Pro Val Cys Gly Gly Leu Ser Ser Asp Arg  
 245 250 255

000043 000001

Ala Leu Lys Ile Leu Arg Gly Leu Thr Asp Leu Asp Ile Val Gly Met  
 260. 265 270

Asp Val Val Glu Val Ala Pro Ser Tyr Asp Gln Ser Asp Ile Thr Ala  
 275 280 285

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Lys Lys Asp  
 305

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 <212> DNA  
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 <221> CDS  
 <222> (1)..(423)

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att ccc tac ccc gtc acc agg cgg att gcc tca agt ttg tat tcg acc 96  
 Ile Pro Tyr Pro Val Thr Arg Arg Ile Ala Ser Ser Leu Tyr Ser Thr  
 20 25 30

gaa tat ttt gtc gta tgc ttt ctg cgt ttg atg cca ctc tct ccg tgt 144  
 Glu Tyr Phe Val Val Cys Phe Leu Arg Leu Met Pro Leu Ser Pro Cys  
 35 40 45

aat ctg tat ttt gtc acc cat ctg cgt acc aat gaa tcg gaa ata gaa 192  
 Asn Leu Tyr Phe Val Thr His Leu Arg Thr Asn Glu Ser Glu Ile Glu  
 50 55 60

aga tgg tct gct gtt ccc tgc caa ata gta ttg aac gac ggc aag tcg 240  
 Arg Trp Ser Ala Val Pro Cys Gln Ile Val Leu Asn Asp Gly Lys Ser  
 65 70 75 80

gaa ttc ggc gga ttc gca ttt gaa gtg caa ctt tcc cta aca gaa aaa 288  
 Glu Phe Gly Gly Phe Ala Phe Glu Val Gln Leu Ser Leu Thr Glu Lys  
 85 90 95

ggc cag tat gcg gta gca tac gac ctt tcc tgc aag aaa gat tgc cat 336  
 Gly Gln Tyr Ala Val Ala Tyr Asp Leu Ser Cys Lys Lys Asp Cys His  
 100 105 110

gag cta cac gca act gac cca agg cga acg ata cca cat cca ata cct 384  
 Glu Leu His Ala Thr Asp Pro Arg Arg Thr Ile Pro His Pro Ile Pro  
 115 120 125

gtc ccg cca ctg cac cgt cac cga aat cgc caa aca gct taa 426  
 Val Pro Pro Leu His Arg His Arg Asn Arg Gln Thr Ala  
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<210> 26  
 <211> 141  
 <212> PRT  
 <213> Neisseria meningitidis

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<400> 26

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Ile Pro Tyr Pro Val Thr Arg Arg Ile Ala Ser Ser Leu Tyr Ser Thr  
20 25 30

Glu Tyr Phe Val Val Cys Phe Leu Arg Leu Met Pro Leu Ser Pro Cys  
35 40 45

Asn Leu Tyr Phe Val Thr His Leu Arg Thr Asn Glu Ser Glu Ile Glu  
50 55 60

Arg Trp Ser Ala Val Pro Cys Gln Ile Val Leu Asn Asp Gly Lys Ser  
65 70 75 80

Glu Phe Gly Gly Phe Ala Phe Glu Val Gln Leu Ser Leu Thr Glu Lys  
85 90 95

Gly Gln Tyr Ala Val Ala Tyr Asp Leu Ser Cys Lys Lys Asp Cys His  
100 105 110

Glu Leu His Ala Thr Asp Pro Arg Arg Thr Ile Pro His Pro Ile Pro  
115 120 125

Val Pro Pro Leu His Arg His Arg Asn Arg Gln Thr Ala  
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<211> 351

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(348)

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ggg att atg ctg ttg aag gta gta cct gag cgt acc gtt tcg gca gat 96  
Gly Ile Met Leu Leu Lys Val Val Pro Glu Arg Thr Val Ser Ala Asp  
20 25 30

gca aaa acc aga gac ccg atg tgg gac aat gcg gct tta cag acc agc 144  
Ala Lys Thr Arg Asp Pro Met Trp Asp Asn Ala Ala Leu Gln Thr Ser  
35 40 45

gaa ggc gta aat ttt att gct cgt ttc cta gga ttt ttt agc gat ggg 192  
Glu Gly Val Asn Phe Ile Ala Arg Phe Leu Gly Phe Phe Ser Asp Gly  
50 55 60

gaa tac cgc tat gtg gat gtc ctg caa ccc aac cat tcc gat att att 240  
Glu Tyr Arg Tyr Val Asp Val Leu Gln Pro Asn His Ser Asp Ile Ile  
65 70 75 80

cgg tat tca ggt aaa gat ttt ccg cta aat caa ata ctt aac cat ata 288  
Arg Tyr Ser Gly Lys Asp Phe Pro Leu Asn Gln Ile Leu Asn His Ile  
85 90 95

cac ccc gcc cgt tat gcg gta acg ttc gaa aac aat gtc gat tcc aag 336  
His Pro Ala Arg Tyr Ala Val Thr Phe Glu Asn Asn Val Asp Ser Lys

09830433.081604

ctg cgc agg cac tga  
Leu Arg Arg His  
115

351

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<210> 28
<211> 116
<212> PRT
<213> Neisseria meningitidis
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Met Gln Asn Gly Gly Gly Lys Ile Tyr Gln Thr Ala Asp Asn Val Glu
  1             5             10             15
Gly Ile Met Leu Leu Lys Val Val Pro Glu Arg Thr Val Ser Ala Asp
             20             25             30
Ala Lys Thr Arg Asp Pro Met Trp Asp Asn Ala Ala Leu Gln Thr Ser
             35             40             45
Glu Gly Val Asn Phe Ile Ala Arg Phe Leu Gly Phe Phe Ser Asp Gly
             50             55             60
Glu Tyr Arg Tyr Val Asp Val Leu Gln Pro Asn His Ser Asp Ile Ile
  65             70             75             80
Arg Tyr Ser Gly Lys Asp Phe Pro Leu Asn Gln Ile Leu Asn His Ile
             85             90             95
His Pro Ala Arg Tyr Ala Val Thr Phe Glu Asn Asn Val Asp Ser Lys
             100             105             110
Leu Arg Arg His
             115

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<210> 29
<211> 1404
<212> DNA
<213> Neisseria meningitidis
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<220>
<221> CDS
<222> (1)..(1401)
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Met	Thr	Leu	Leu	Asn	Leu	Met	Ile	Met	Gln	Asp	Tyr	Gly	Ile	Ser	Val	
1				5					10					15		
tgc	ctg	aca	ctg	acg	ccc	tat	ttg	caa	cat	gaa	cta	ttt	tcg	gct	atg	96
Cys	Leu	Thr	Leu	Thr	Pro	Tyr	Leu	Gln	His	Glu	Leu	Phe	Ser	Ala	Met	
			20					25					30			
aaa	tcc	tat	ttt	tcc	aaa	tat	atc	cta	ccc	ggt	tca	ctt	ttt	acc	ttg	144
Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu	
		35					40					45				
cca	cta	tcc	ctt	tcc	cca	tcc	ggt	tcg	gct	ttt	acg	ctg	cct	gaa	gca	192
Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala	
	50					55					60					
tqg	cqg	gcg	gcg	cag	caa	cat	tcg	gct	gat	ttt	caa	gcg	tcc	cat	tac	240

[illegible]



gtc ggc gta cag ttg a	ttg ccg ctt tat acc ggc gga gaa g	tcg	1056
Val Gly Val Gln Leu A	Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser		
340	345	350	
ggc aaa atc cat gaa gcc gaa gcg caa tac ggg gcc gcc gaa gca cag		1104	
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln			
355	360	365	
ctg acc gca acc gag cgg cac atc aaa ctc gcc gta cgc cag gct tat		1152	
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr			
370	375	380	
acc gaa agc ggt gcg gcg cgt tac caa atc atg gcg caa gaa cgg gtt		1200	
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val			
385	390	395	400
ttg gaa agc agc cgt ttg aaa ctg aaa tcg acc gaa acc ggc caa caa		1248	
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln			
405	410	415	
tac ggc atc cgc aac cgg ctg gaa gta ata cgg gcg cgg cag gaa gtc		1296	
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val			
420	425	430	
gcc caa gca gaa cag aaa ctg gct caa gca cgg tat aaa ttc atg ctg		1344	
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu			
435	440	445	
gct tat ttg cgc ttg gtg aaa gag agc ggg tta ggg ttg gaa acg gta		1392	
Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val			
450	455	460	
ttt gcg gaa taa		1404	
Phe Ala Glu			
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<213> Neisseria meningitidis			
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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val			
1	5	10	15
Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met			
20	25	30	
Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu			
35	40	45	
Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala			
50	55	60	
Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr			
65	70	75	80
Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe			
85	90	95	
Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser			
100	105	110	
Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln			



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115	120	125
Thr Leu Phe Asp Ala A Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe		
130	135	140
Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu		
145	150	155
Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp		
	165	170
Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val		
	180	185
Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp		
	195	200
Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile		
210	215	220
Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr		
225	230	235
Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu		
	245	250
Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp		
	260	265
Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu		
	275	280
Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg		
290	295	300
Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr		
305	310	315
Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser		
	325	330
Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser		
	340	345
Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln		
355	360	365
Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr		
370	375	380
Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val		
385	390	395
Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln		
	405	410
Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val		
	420	425
Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu		
	435	440
Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val		
450	455	460
Phe Ala Glu		

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<221> CDS
<222> (1) .. (693)
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Met	Lys	Gln	Ser	Ala	Arg	Ile	Lys	Asn	Met	Asp	Gln	Thr	Leu	Lys	Asn	
1				5					10					15		
aca	ttg	ggc	att	tgc	gcg	ctt	tta	gcc	ttt	tgt	ttt	ggc	gcg	gcc	atc	96
Thr	Leu	Gly	Ile	Cys	Ala	Leu	Leu	Ala	Phe	Cys	Phe	Gly	Ala	Ala	Ile	
			20					25					30			
gca	tca	ggg	tat	cac	ttg	gaa	tat	gaa	tac	ggc	tac	cgt	tat	tct	gcc	144
Ala	Ser	Gly	Tyr	His	Leu	Glu	Tyr	Glu	Tyr	Gly	Tyr	Arg	Tyr	Ser	Ala	
		35					40					45				
gtg	ggg	gct	ttg	gct	tcg	gtt	gta	ttt	tta	tta	tta	ttg	gca	cgc	ggg	192
Val	Gly	Ala	Leu	Ala	Ser	Val	Val	Phe	Leu	Leu	Leu	Leu	Ala	Arg	Gly	
	50					55					60					
ttc	ccg	cgc	gtt	tct	tca	gtt	gtt	tta	ctg	att	tac	gtc	ggc	aca	acc	240
Phe	Pro	Arg	Val	Ser	Ser	Val	Val	Leu	Leu	Ile	Tyr	Val	Gly	Thr	Thr	
65					70					75					80	
gcc	cta	tat	ttg	ccg	gtc	ggc	tgg	ctg	tat	ggg	gcg	ccg	tct	tat	cag	288
Ala	Leu	Tyr	Leu	Pro	Val	Gly	Trp	Leu	Tyr	Gly	Ala	Pro	Ser	Tyr	Gln	
				85					90					95		
ata	gtc	ggg	tcg	ata	ttg	gaa	agc	aat	cct	gcc	gag	gcg	cgt	gaa	ttt	336
Ile	Val	Gly	Ser	Ile	Leu	Glu	Ser	Asn	Pro	Ala	Glu	Ala	Arg	Glu	Phe	
			100					105					110			
gtc	ggc	aat	ctt	ccc	ggg	tcg	ctt	tat	ttt	gtg	cag	gca	tta	ttt	ttc	384
Val	Gly	Asn	Leu	Pro	Gly	Ser	Leu	Tyr	Phe	Val	Gln	Ala	Leu	Phe	Phe	
		115					120					125				
att	ttt	ggc	ttg	aca	gtt	tgg	aga	tat	tgt	gta	tcg	ggg	ggg	gta	ttt	432
Ile	Phe	Gly	Leu	Thr	Val	Trp	Arg	Tyr	Cys	Val	Ser	Gly	Gly	Val	Phe	
	130					135					140					
gct	gac	gta	aaa	aac	tat	aaa	cgc	cgc	agc	aaa	ata	tgg	ctg	act	ata	480
Ala	Asp	Val	Lys	Asn	Tyr	Lys	Arg	Arg	Ser	Lys	Ile	Trp	Leu	Thr	Ile	
145				150						155					160	
tta	ttg	act	ttg	att	ttg	tcc	tgc	gcg	gtg	atg	gat	aaa	atc	gcc	agc	528
Leu	Leu	Thr	Leu	Ile	Leu	Ser	Cys	Ala	Val	Met	Asp	Lys	Ile	Ala	Ser	
				165					170					175		
gat	aaa	gat	ttg	cga	gaa	cct	gat	gcc	ggc	ctg	ttg	ttg	aat	att	ttc	576
Asp	Lys	Asp	Leu	Arg	Glu	Pro	Asp	Ala	Gly	Leu	Leu	Leu	Asn	Ile	Phe	
			180					185					190			
gac	ctg	tat	tac	gat	ttg	gct	tcc	gcg	ccg	gca	cca	ata	tgt	cgc	caa	624
Asp	Leu	Tyr	Tyr	Asp	Leu	Ala	Ser	Ala	Pro	Ala	Pro	Ile	Cys	Arg	Gln	
		195				200						205				

gcg cgc cca cat ttt gga agc agc aaa aaa agc gtc aac atg gca tat 672  
Ala Arg Pro His Phe Ser Ser Lys Lys Ser Val Asn Met Gln Tyr  
210 215 220

ccg tca tgt tgc gcc caa gta taa 696  
Pro Ser Cys Cys Ala Gln Val  
225 230

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<210> 32
<211> 231
<212> PRT
<213> Neisseria meningitidis
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Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn  
1 5 10 15

Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile  
20 25 30

Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala  
35 40 45

Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly  
50 55 60

Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr  
65 70 75 80

Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln  
85 90 95

Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe  
100 105 110

Val	Gly	Asn	Leu	Pro	Gly	Ser	Leu	Tyr	Phe	Val	Gln	Ala	Leu	Phe	Phe
		115					120					125			

Ile	Phe	Gly	Leu	Thr	Val	Trp	Arg	Tyr	Cys	Val	Ser	Gly	Gly	Val	Phe
	130					135					140				

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile  
145 150 155 160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Asp Lys Ile Ala Ser  
165 170 175

Asp Lys Asp Leu Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe  
180 185 190

Asp Leu Tyr Tyr Asp Leu Ala Ser Ala Pro Ala Pro Ile Cys Arg Gln  
195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr  
210 215 220

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Pro Ser Cys Cys Ala Gln Val
225                               230
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<210> 33
<211> 909
<212> DNA
<213> Neisseria meningitidis
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<211> 909

<212> DNA

<213> Neisseria meningitidis

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Met Asn Val Tyr Gly Phe Pro Leu Pro Asp Thr Pro Phe Leu Ser Arg	
1 5 10 15	
acc aaa ggg ctg ttg ata aac ggt tac cat ttc acc gcc cac gcg acg	96
Thr Lys Gly Leu Leu Ile Asn Gly Tyr His Phe Thr Ala His Ala Thr	
20 25 30	
aat ctt tcg ctg ccg cag act ttg ggg ctg ccg gga gag ccg aac aat	144
Asn Leu Ser Leu Pro Gln Thr Leu Gly Leu Pro Gly Glu Pro Asn Asn	
35 40 45	
aac att gtc agc ttg gcg aag cag gcg ggt ttt cgg acg gcg tgg ctg	192
Asn Ile Val Ser Leu Ala Lys Gln Ala Gly Phe Arg Thr Ala Trp Leu	
50 55 60	
tct aat caa gga atg ttg ggg cat ttt gcc aac gaa att tcc acc tat	240
Ser Asn Gln Gly Met Leu Gly His Phe Ala Asn Glu Ile Ser Thr Tyr	
65 70 75 80	
gcc cta cgc agc gat tat ccg tgg ttt acc caa agg ggt gat tat ggc	288
Ala Leu Arg Ser Asp Tyr Pro Trp Phe Thr Gln Arg Gly Asp Tyr Gly	
85 90 95	
aaa agc gcg ggg ttg agc gac cgc ctt ttg ttg ccg gcg ttc aaa cgg	336
Lys Ser Ala Gly Leu Ser Asp Arg Leu Leu Leu Pro Ala Phe Lys Arg	
100 105 110	
gtt ttg ata gga aat gca ggc acg aag cct cgg ctg att gtg atg cac	384
Val Leu Ile Gly Asn Ala Gly Thr Lys Pro Arg Leu Ile Val Met His	
115 120 125	
ctg atg ggt tcg cac agt gat ttt tgc aca cgt ttg gat aag gat gcg	432
Leu Met Gly Ser His Ser Asp Phe Cys Thr Arg Leu Asp Lys Asp Ala	
130 135 140	
cgg cgg ttt cag tat caa act gaa aaa ata tcc tgc tat gtt tcc acc	480
Arg Arg Phe Gln Tyr Gln Thr Glu Lys Ile Ser Cys Tyr Val Ser Thr	
145 150 155 160	
atc gcg caa acc gat aaa ttt tta gaa gat aca gtt aag ata ttg aat	528
Ile Ala Gln Thr Asp Lys Phe Leu Glu Asp Thr Val Lys Ile Leu Asn	
165 170 175	
gaa aat aaa gaa agc tgg tct ttg gtt tac ttt tcc gac cac ggt ttg	576
Glu Asn Lys Glu Ser Trp Ser Leu Val Tyr Phe Ser Asp His Gly Leu	
180 185 190	
atg cat gtc ggt aaa ggc ggc gag cga acg ttg aca cat ggt gcg tgg	624
Met His Val Gly Lys Gly Gly Glu Arg Thr Leu Thr His Gly Ala Trp	
195 200 205	
aag cgt caa agc tac ggc gtg ccg ctg gtt aaa att tcg tcc gat gac	672
Lys Arg Gln Ser Tyr Gly Val Pro Leu Val Lys Ile Ser Ser Asp Asp	
210 215 220	
acg cgg cgc gaa atg att aaa gtg agg cgc agc gcg ttt aat ttt tta	720
Thr Arg Arg Glu Met Ile Lys Val Arg Arg Ser Ala Phe Asn Phe Leu	
225 230 235 240	

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225                      230                      235                      240

Arg Gly Phe Gly Ser Thr Gly Ile Glu Thr Asp Glu Leu Pro Asp  
                                  245                      250                      255

Asp Gly Tyr Asp Phe Trp Gly Asn Val Pro Asp Val Gln Gly Glu Gly  
                                  260                      265                      270

Asn Asn Leu Ala Phe Ile Asp Gly Leu Pro Asp Asp Pro Ala Pro Trp  
                                  275                      280                      285

Tyr Ala Gly Lys Gly Lys Ser Thr Lys Asn Thr Ser Lys Lys  
                                  290                      295                      300

<210> 35  
 <211> 864  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
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<400> 35

atg atg agt caa cac tct gcc gga gca cgt ttc cgc caa gcc gtg aaa	48
Met Met Ser Gln His Ser Ala Gly Ala Arg Phe Arg Gln Ala Val Lys	
1                      5                      10                      15	
 gaa tcg aat ccg ctt gcc gtc gcc ggt tgc gtc aat gct tat ttt gca	96
Glu Ser Asn Pro Leu Ala Val Ala Gly Cys Val Asn Ala Tyr Phe Ala	
20                      25                      30	
 cga ttg gcc acc caa agc ggt ttc aaa gcc atc tat ctg tcc ggc ggc	144
Arg Leu Ala Thr Gln Ser Gly Phe Lys Ala Ile Tyr Leu Ser Gly Gly	
35                      40                      45	
 ggc gtg gca gcc tgt tct tgc ggt atc cct gat ttg ggc att acc aca	192
Gly Val Ala Ala Cys Ser Cys Gly Ile Pro Asp Leu Gly Ile Thr Thr	
50                      55                      60	
 atg gaa gat gtg ctg atc gac gca cga cgc att acg gac aac gtg gat	240
Met Glu Asp Val Leu Ile Asp Ala Arg Arg Ile Thr Asp Asn Val Asp	
65                      70                      75                      80	
 acg cct ctg ctg gtg gac atc gat gtg ggt tgg ggc ggt gca ttc aat	288
Thr Pro Leu Leu Val Asp Ile Asp Val Gly Trp Gly Gly Ala Phe Asn	
85                      90                      95	
 att gcc cgt acc att cgc aac ttt gaa cgc gcc ggt gtt gca gcg gtt	336
Ile Ala Arg Thr Ile Arg Asn Phe Glu Arg Ala Gly Val Ala Ala Val	
100                      105                      110	
 cac atc gaa gat cag gta gcg caa aaa cgc tgc ggc cac cgt ccg aac	384
His Ile Glu Asp Gln Val Ala Gln Lys Arg Cys Gly His Arg Pro Asn	
115                      120                      125	
 aaa gcc att gta tct aaa gat gaa atg gtc gac cgt atc aaa gct gcc	432
Lys Ala Ile Val Ser Lys Asp Glu Met Val Asp Arg Ile Lys Ala Ala	
130                      135                      140	
 gta gat gcg cgc gtt gat gag aac ttc gtg att atg gcg cgt acc gat	480
Val Asp Ala Arg Val Asp Glu Asn Phe Val Ile Met Ala Arg Thr Asp	
145                      150                      155                      160	

09043 06160

gcg ctg gcg gta gaa ggt ttg gat gcc gct atc gaa cgc gcc gaa gct 528  
 Ala Leu Ala Val Glu Leu Asp Ala Ala Ile Glu Arg Ala Leu Ala  
 165 170 175

tgt gtc gaa gcc ggt gcg gac atg att ttc cct gaa gcc atg acc gat 576  
 Cys Val Glu Ala Gly Ala Asp Met Ile Phe Pro Glu Ala Met Thr Asp  
 180 185 190

ttg aac atg tac cgc caa ttt gca gat gcg gtg aaa gtg ccc gtg ttg 624  
 Leu Asn Met Tyr Arg Gln Phe Ala Asp Ala Val Lys Val Pro Val Leu  
 195 200 205

gcg aac att acc gag ttt ggt tcc act ccg ctt tat acc caa agc gag 672  
 Ala Asn Ile Thr Glu Phe Gly Ser Thr Pro Leu Tyr Thr Gln Ser Glu  
 210 215 220

ctg gct gaa aac ggc gtg tcg ctg gtg ctg tat ccg ctg tca tcg ttc 720  
 Leu Ala Glu Asn Gly Val Ser Leu Val Leu Tyr Pro Leu Ser Ser Phe  
 225 230 235 240

cgt gca gca agc aaa gcc gct ctg aat gtt tac gaa gcg att atg cgc 768  
 Arg Ala Ala Ser Lys Ala Ala Leu Asn Val Tyr Glu Ala Ile Met Arg  
 245 250 255

gat ggc act tca ggc ggc ggt ggt gga cag tat gca aac ccg tgc cga 816  
 Asp Gly Thr Ser Gly Gly Gly Gly Gly Gln Tyr Ala Asn Pro Cys Arg  
 260 265 270

gct gta cga gca tct gaa cta tca tgc ctt cga gca aaa act gga taa 864  
 Ala Val Arg Ala Ser Glu Leu Ser Cys Leu Arg Ala Lys Thr Gly  
 275 280 285

<210> 36

<211> 287

<212> PRT

<213> Neisseria meningitidis

<400> 36

Met Met Ser Gln His Ser Ala Gly Ala Arg Phe Arg Gln Ala Val Lys  
 1 5 10 15

Glu Ser Asn Pro Leu Ala Val Ala Gly Cys Val Asn Ala Tyr Phe Ala  
 20 25 30

Arg Leu Ala Thr Gln Ser Gly Phe Lys Ala Ile Tyr Leu Ser Gly Gly  
 35 40 45

Gly Val Ala Ala Cys Ser Cys Gly Ile Pro Asp Leu Gly Ile Thr Thr  
 50 55 60

Met Glu Asp Val Leu Ile Asp Ala Arg Arg Ile Thr Asp Asn Val Asp  
 65 70 75 80

Thr Pro Leu Leu Val Asp Ile Asp Val Gly Trp Gly Gly Ala Phe Asn  
 85 90 95

Ile Ala Arg Thr Ile Arg Asn Phe Glu Arg Ala Gly Val Ala Ala Val  
 100 105 110

His Ile Glu Asp Gln Val Ala Gln Lys Arg Cys Gly His Arg Pro Asn  
 115 120 125

Lys Ala Ile Val Ser Lys Asp Glu Met Val Asp Arg Ile Lys Ala Ala  
 130 135 140

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Val Asp Ala Arg Val Asn Glu Asn Phe Val Ile Met Ala Arg Thr Asp	
145	155 160
Ala Leu Ala Val Glu Gly Leu Asp Ala Ala Ile Glu Arg Ala Gln Ala	
165	170 175
Cys Val Glu Ala Gly Ala Asp Met Ile Phe Pro Glu Ala Met Thr Asp	
180	185 190
Leu Asn Met Tyr Arg Gln Phe Ala Asp Ala Val Lys Val Pro Val Leu	
195	200 205
Ala Asn Ile Thr Glu Phe Gly Ser Thr Pro Leu Tyr Thr Gln Ser Glu	
210	215 220
Leu Ala Glu Asn Gly Val Ser Leu Val Leu Tyr Pro Leu Ser Ser Phe	
225	230 235 240
Arg Ala Ala Ser Lys Ala Ala Leu Asn Val Tyr Glu Ala Ile Met Arg	
245	250 255
Asp Gly Thr Ser Gly Gly Gly Gly Gly Gln Tyr Ala Asn Pro Cys Arg	
260	265 270
Ala Val Arg Ala Ser Glu Leu Ser Cys Leu Arg Ala Lys Thr Gly	
275	280 285

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 <211> 921  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(918)

<400> 37	
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Met Pro Ser Ser Lys Asn Trp Ile Asn Cys Phe Lys Asn Asp Leu Pro	
1 5 10 15	
ctt tca gac tgc ctt tca aca aat ccg cat cgg tcg tct gaa aac ccg	96
Leu Ser Asp Cys Leu Ser Thr Asn Pro His Arg Ser Ser Glu Asn Pro	
20 25 30	
aaa ccc ata aaa aca caa agg aga aat acc atg act gaa act act caa	144
Lys Pro Ile Lys Thr Gln Arg Arg Asn Thr Met Thr Glu Thr Thr Gln	
35 40 45	
acc ccg acc ctc aaa cct aaa aaa tcc gtt gcg ctt tct ggc gtt gcg	192
Thr Pro Thr Leu Lys Pro Lys Lys Ser Val Ala Leu Ser Gly Val Ala	
50 55 60	
gcc ggt aat acc gct ttg tgt acc gtt ggc cgt acc ggc aac gat ttg	240
Ala Gly Asn Thr Ala Leu Cys Thr Val Gly Arg Thr Gly Asn Asp Leu	
65 70 75 80	
agc tat cgc ggt tac gac att ctg gat ttg gca caa aaa tgt gag ttt	288
Ser Tyr Arg Gly Tyr Asp Ile Leu Asp Leu Ala Gln Lys Cys Glu Phe	
85 90 95	
gaa gaa gtt gcc cac ctg ctg att cac ggc cat tta ccc aac aaa ttc	336
Glu Glu Val Ala His Leu Leu Ile His Gly His Leu Pro Asn Lys Phe	
100 105 110	

TC9T80-EE40E360



gag ctg gcc gct tat gcc aag ctc aaa tcc atg cgc ggc gct cct 384  
 Glu Leu Ala Ala Tyr Lys Ala Lys Leu Lys Ser Met Arg Gly Leu Pro  
 115 120 125

atc cgt gtg att aaa gtt ttg gaa agc ctg cct gca cat acc cat ccg 432  
 Ile Arg Val Ile Lys Val Leu Glu Ser Leu Pro Ala His Thr His Pro  
 130 135 140

atg gac gtg atg cgt acc ggc gta tcc atg ctg ggc tgt gtt cat cct 480  
 Met Asp Val Met Arg Thr Gly Val Ser Met Leu Gly Cys Val His Pro  
 145 150 155 160

gaa cgt gaa ggc cat ccg gaa agc gaa gcg cgc gac att gcc gac aaa 528  
 Glu Arg Glu Gly His Pro Glu Ser Glu Ala Arg Asp Ile Ala Asp Lys  
 165 170 175

ctg atc gcc agc ctc ggc agt atc ctc ttg tac tgg tat caa tat tcg 576  
 Leu Ile Ala Ser Leu Gly Ser Ile Leu Leu Tyr Trp Tyr Gln Tyr Ser  
 180 185 190

cac aac ggc aaa cgc att gaa gtt gaa agc gaa gaa gag acc atc ggc 624  
 His Asn Gly Lys Arg Ile Glu Val Glu Ser Glu Glu Glu Thr Ile Gly  
 195 200 205

ggt cat ttc ctg cac ctg ttg cac ggc aaa cgc cca agc gaa tca cac 672  
 Gly His Phe Leu His Leu Leu His Gly Lys Arg Pro Ser Glu Ser His  
 210 215 220

atc aaa gcc atg cac gtt tca ctg att ctg tat gcc gaa cac gag ttc 720  
 Ile Lys Ala Met His Val Ser Leu Ile Leu Tyr Ala Glu His Glu Phe  
 225 230 235 240

aac gct tct acc ttt acc gcc cgc gtg atc gcc ggt aca ggc tct gat 768  
 Asn Ala Ser Thr Phe Thr Ala Arg Val Ile Ala Gly Thr Gly Ser Asp  
 245 250 255

atg tac tcc agc att acc gga gca atc ggc gcg ttg aaa ggt ccg aaa 816  
 Met Tyr Ser Ser Ile Thr Gly Ala Ile Gly Ala Leu Lys Gly Pro Lys  
 260 265 270

cac ggc ggc gcg aac gaa ggg ctt acg ata ttc aaa aac gct acc gca 864  
 His Gly Gly Ala Asn Glu Gly Leu Thr Ile Phe Lys Asn Ala Thr Ala  
 275 280 285

atg ccg acg aag ccg aag ccg aca tcc gcg aac gca tcg gcc gca aag 912  
 Met Pro Thr Lys Pro Lys Pro Thr Ser Ala Asn Ala Ser Ala Ala Lys  
 290 295 300

aaa tcg tga 921  
 Lys Ser  
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 <211> 306  
 <212> PRT  
 <213> Neisseria meningitidis

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 Leu Ser Asp Cys Leu Ser Thr Asn Pro His Arg Ser Ser Glu Asn Pro  
 20 25 30

Lys Pro Ile Lys Thr Gln Arg Arg Asn Thr Met Thr Glu Thr Thr Gln  
 35 . . . 40 45  
 Thr Pro Thr Leu Lys Pro Lys Lys Ser Val Ala Leu Ser Gly Val Ala  
 50 55 60  
 Ala Gly Asn Thr Ala Leu Cys Thr Val Gly Arg Thr Gly Asn Asp Leu  
 65 70 75 80  
 Ser Tyr Arg Gly Tyr Asp Ile Leu Asp Leu Ala Gln Lys Cys Glu Phe  
 85 90 95  
 Glu Glu Val Ala His Leu Leu Ile His Gly His Leu Pro Asn Lys Phe  
 100 105 110  
 Glu Leu Ala Ala Tyr Lys Ala Lys Leu Lys Ser Met Arg Gly Leu Pro  
 115 120 125  
 Ile Arg Val Ile Lys Val Leu Glu Ser Leu Pro Ala His Thr His Pro  
 130 135 140  
 Met Asp Val Met Arg Thr Gly Val Ser Met Leu Gly Cys Val His Pro  
 145 150 155 160  
 Glu Arg Glu Gly His Pro Glu Ser Glu Ala Arg Asp Ile Ala Asp Lys  
 165 170 175  
 Leu Ile Ala Ser Leu Gly Ser Ile Leu Leu Tyr Trp Tyr Gln Tyr Ser  
 180 185 190  
 His Asn Gly Lys Arg Ile Glu Val Glu Ser Glu Glu Glu Thr Ile Gly  
 195 200 205  
 Gly His Phe Leu His Leu Leu His Gly Lys Arg Pro Ser Glu Ser His  
 210 215 220  
 Ile Lys Ala Met His Val Ser Leu Ile Leu Tyr Ala Glu His Glu Phe  
 225 230 235 240  
 Asn Ala Ser Thr Phe Thr Ala Arg Val Ile Ala Gly Thr Gly Ser Asp  
 245 250 255  
 Met Tyr Ser Ser Ile Thr Gly Ala Ile Gly Ala Leu Lys Gly Pro Lys  
 260 265 270  
 His Gly Gly Ala Asn Glu Gly Leu Thr Ile Phe Lys Asn Ala Thr Ala  
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 Met Pro Thr Lys Pro Lys Pro Thr Ser Ala Asn Ala Ser Ala Ala Lys  
 290 295 300  
 Lys Ser  
 305

<210> 39  
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 <212> DNA  
 <213> Neisseria meningitidis

<220>  
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 <222> (1)..(942)

<400> 39

09830433-081604

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tta Leu	ctg Leu	atg Met	gga Gly 20	ata Ile	ttc Phe	ttg Leu	gca Ala	gtt Val 25	tct Ser	gcg Ala	gcc Ala	ctt Leu	ctg Leu 30	aat Asn	gca Ala	96
acc Thr	atc Ile	ggc Gly 35	ata Ile	ttc Phe	agc Ser	aag Lys	ata Ile 40	ttg Leu	atg Met	gag Glu	cag Gln	ggc Gly 45	ttg Leu	tct Ser	gtt Val	144
cag Gln	cat His 50	att Ile	gca Ala	ttt Phe	ttg Leu	aaa Lys 55	act Thr	ttg Leu	aca Thr	ggg Gly	ttc Phe 60	gtg Val	ttt Phe	atc Ile	agc Ser	192
att Ile 65	ttg Leu	ctt Leu	tgc Cys	cgt Arg	acc Thr 70	ggg Gly	ttt Phe	acc Thr	aga Arg	cag Gln 75	att Ile	gcg Ala	gat Asp	att Ile	tca Ser 80	240
aga Arg	aag Lys	aaa Lys	gag Glu	gca Ala 85	att Ile	ttg Leu	ccg Pro	ttg Leu	ctg Leu 90	tta Leu	aaa Lys	gta Val	gca Ala	att Ile 95	tgt Cys	288
gct Ala	ttt Phe	ttc Phe	gga Gly 100	att Ile	tat Tyr	acg Thr	ttg Leu	ttt Phe 105	ttc Phe	ttt Phe	gaa Glu	acc Thr 110	aca Thr	gct Ala	tat Tyr	336
caa Gln	tat Tyr	ggc Gly 115	aat Asn	gct Ala	gcg Ala	aat Asn	gta Val 120	gta Val	gtt Val	gta Val	tta Leu	atg Met 125	gca Ala	tcg Ser	gct Ala	384
gcc Ala 130	gta Val	tct Ser	gcc Ala	ttg Leu	ata Ile	ttg Leu 135	gac Asp	agc Ser	ata Ile	ctg Leu	tta Leu 140	gat Asp	gaa Glu	cgt Arg	att Ile	432
tgc Cys 145	att Ile	tct Ser	tca Ser	gtc Val	gtc Val 150	ggg Gly	gtg Val	ggg Gly	ttg Leu	gca Ala 155	gta Val	ttg Leu	ggg Gly	atc Ile	gca Ala 160	480
atg Met	att Ile	tct Ser	tgg Trp	act Thr 165	gga Gly	gaa Glu	gga Gly	agt Ser	tta Leu 170	ggg Gly	ttg Leu	att Ile	ctg Leu	aat Asn 175	gcc Ala	528
gca Ala	ctg Leu	gcg Ala	ggc Gly 180	tcg Ser	ggc Gly	tac Tyr	ggg Gly 185	tgt Cys	ttt Phe	tcc Ser	gtt Val	ttg Leu 190	att Ile	aag Lys	aaa Lys	576
ttc Phe	ggc Gly	cta Leu 195	aac Asn	ggc Gly	ggg Gly	att Ile 200	tat Tyr	ttg Leu	aca Thr	cgg Arg	ata Ile 205	ttg Leu	atg Met	ttt Phe	ttt Phe	624
gga Gly 210	agt Ser	att Ile	ttt Phe	ttg Leu	ttt Phe	atc Ile 215	cct Pro	tca Ser	ttg Leu	gaa Glu	ggg Gly 220	att Ile	gag Glu	gat Asp	ata Ile	672
cat His 225	tgg Trp	caa Gln	tgg Trp	tct Ser	ttt Phe 230	att Ile	ccg Pro	cca Pro	ctc Leu	ttg Leu 235	gca Ala	ttg Leu	tct Ser	tta Leu	ttg Leu 240	720
ccg Pro	acg Thr	att Ile	tta Leu	gga Gly 245	ttt Phe	tat Tyr	tgt Cys	aca Thr	act Thr 250	aaa Lys	gca Ala	ttg Leu	gat Asp	tat Tyr 255	ttg Leu	768
agt Ser	gct Ala	gcg Ala	aag Lys	gta Val	cag Gln	gta Val	act Thr	gaa Glu	ttg Leu	gcc Ala	gag Glu	cca Pro	ttg Leu	ttt Phe	gct Ala	816

260

265

270

gcc gta ctg gct tgg ttt ttt ttg aat gaa ata ccg gaa gga cgc ttc 864  
 Ala Val Leu Ala Trp Leu Phe Leu Asn Glu Ile Pro Glu Gly Arg Phe  
 275 280 285

ttt gtc ggc gcc att ctg att att gcc ggt att gtg tct atc aat ggg 912  
 Phe Val Gly Ala Ile Leu Ile Ile Ala Gly Ile Val Ser Ile Asn Gly  
 290 295 300

ctg tat cga cca ttg ttg aag cga att gaa taa 945  
 Leu Tyr Arg Pro Leu Leu Lys Arg Ile Glu  
 305 310

&lt;210&gt; 40

&lt;211&gt; 314

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 40

Met His Leu Cys Gly Lys Tyr Tyr Gly Val Asn Met Lys Leu Arg Asp  
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Leu Leu Met Gly Ile Phe Leu Ala Val Ser Ala Ala Leu Leu Asn Ala  
 20 25 30

Thr Ile Gly Ile Phe Ser Lys Ile Leu Met Glu Gln Gly Leu Ser Val  
 35 40 45

Gln His Ile Ala Phe Leu Lys Thr Leu Thr Gly Phe Val Phe Ile Ser  
 50 55 60

Ile Leu Leu Cys Arg Thr Gly Phe Thr Arg Gln Ile Ala Asp Ile Ser  
 65 70 75 80

Arg Lys Lys Glu Ala Ile Leu Pro Leu Leu Leu Lys Val Ala Ile Cys  
 85 90 95

Ala Phe Phe Gly Ile Tyr Thr Leu Phe Phe Phe Glu Thr Thr Ala Tyr  
 100 105 110

Gln Tyr Gly Asn Ala Ala Asn Val Val Val Val Leu Met Ala Ser Ala  
 115 120 125

Ala Val Ser Ala Leu Ile Leu Asp Ser Ile Leu Leu Asp Glu Arg Ile  
 130 135 140

Cys Ile Ser Ser Val Val Gly Val Gly Leu Ala Val Leu Gly Ile Ala  
 145 150 155 160

Met Ile Ser Trp Thr Gly Glu Gly Ser Leu Gly Leu Ile Leu Asn Ala  
 165 170 175

Ala Leu Ala Gly Ser Gly Tyr Gly Cys Phe Ser Val Leu Ile Lys Lys  
 180 185 190

Phe Gly Leu Asn Gly Gly Ile Tyr Leu Thr Arg Ile Leu Met Phe Phe  
 195 200 205

Gly Ser Ile Phe Leu Phe Ile Pro Ser Leu Glu Gly Ile Glu Asp Ile  
 210 215 220

His Trp Gln Trp Ser Phe Ile Pro Pro Leu Leu Ala Leu Ser Leu Leu  
 225 230 235 240

T09T80"CEHDEB60



aca aaa acc gca.ttt. aat gtg gac gtg att ccg gcg gg ac ggc	528
Thr Lys Thr Ala Phe Glu Asn Val Asp Val Ile Pro Ala Gly Asn Gly	
165 170 175	
atc atg cac caa atc aat cta gaa aaa atg tcg ccc gtc gtc caa gtc	576
Ile Met His Gln Ile Asn Leu Glu Lys Met Ser Pro Val Val Gln Val	
180 185 190	
aaa aac ggc gtg gcg ttc ccc gat acc tgc gtc ggc acg gat tcg cac	624
Lys Asn Gly Val Ala Phe Pro Asp Thr Cys Val Gly Thr Asp Ser His	
195 200 205	
acg ccg cac gtc gat gcg ctg ggc gtg att tcc gtg ggc gtg ggc gga	672
Thr Pro His Val Asp Ala Leu Gly Val Ile Ser Val Gly Val Gly Gly	
210 215 220	
ttg gaa gcg gaa acc gtg atg ctg ggt cgc gcg tcc atg atg cgc ctg	720
Leu Glu Ala Glu Thr Val Met Leu Gly Arg Ala Ser Met Met Arg Leu	
225 230 235 240	
ccc gat att gtc ggc gtt gag ctg aac ggc aaa cgg cag gcg ggc att	768
Pro Asp Ile Val Gly Val Glu Leu Asn Gly Lys Arg Gln Ala Gly Ile	
245 250 255	
acg gcg acg gat att gtg ttg gca ctg acc gag ttt ctg cgc aaa gaa	816
Thr Ala Thr Asp Ile Val Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu	
260 265 270	
cgc gtg gtc ggg gcg ttt gtc gaa ttc ttc ggc gag ggc gcg aga agc	864
Arg Val Val Gly Ala Phe Val Glu Phe Phe Gly Glu Gly Ala Arg Ser	
275 280 285	
ctg tct atc ggc gac cgc gcg acc att tcc aac atg acg ccg gag ttc	912
Leu Ser Ile Gly Asp Arg Ala Thr Ile Ser Asn Met Thr Pro Glu Phe	
290 295 300	
ggc gcg act gcc gcg atg ttc gct att gat gag caa acc att gat tat	960
Gly Ala Thr Ala Ala Met Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr	
305 310 315 320	
ttg aaa ctg acc gga cgc gac gac gcg cag gtg aaa ttg gtg gaa acc	1008
Leu Lys Leu Thr Gly Arg Asp Asp Ala Gln Val Lys Leu Val Glu Thr	
325 330 335	
tac gcc aaa acc gca ggc tta tgg gca gat gcc ttg aaa acc gcc gtt	1056
Tyr Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val	
340 345 350	
tat ccg cgc gtt ttg aaa ttt gat ttg agc agc gta acg cgc aat atg	1104
Tyr Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met	
355 360 365	
gca ggc ccg agc aac ccg cac gcg cgt ttt gcg acc gcc gat ttg gcc	1152
Ala Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala	
370 375 380	
agc aaa ggc ttg gct aaa cct tac gaa gag cct tca gac ggc caa atg	1200
Ser Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met	
385 390 395 400	
ccc gac ggc gcg gtc atc atc gcc gcg att acc agt tgc acc aac act	1248
Pro Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr	
405 410 415	
tcc aac ccg cgc aac gtt gtt gcc gcc gcg ctc ttg gcg cgc aac gcc	1296

09830433-081601



cgc gct acc ttc gcc	ccg aaa ctg ttt aac gaa atg	aaa aac	2112
Arg Ala Thr Phe Ala	Pro Lys Leu Phe Asn Glu Met Val	Lys Asn	
690	695	700	
gaa gac ggc agc gtg cgc	caa ggc tcg ttc gcc cgc gtc gaa ccc gaa		2160
Glu Asp Gly Ser Val Arg	Gln Gly Ser Phe Ala Arg Val Glu Pro Glu		
705	710	715	720
ggc gaa acc atg cgc atg tgg gaa gcc atc gaa acc tat atg aac cgc			2208
Gly Glu Thr Met Arg Met Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg			
	725	730	735
aaa cag ccg ctc atc atc att gcc ggt gcg gac tat ggt caa ggc tca			2256
Lys Gln Pro Leu Ile Ile Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser			
	740	745	750
agc cgc gac tgg gct gca aaa ggc gta cgc ctc gcc ggc gta gaa gcg			2304
Ser Arg Asp Trp Ala Ala Lys Gly Val Arg Leu Ala Gly Val Glu Ala			
	755	760	765
att gtt gcc gaa ggc ttc gag cgt atc cac cgc acc aac ctt atc ggc			2352
Ile Val Ala Glu Gly Phe Glu Arg Ile His Arg Thr Asn Leu Ile Gly			
	770	775	780
atg ggc gtg ttg ccg ctg cag ttc aaa ccc gac acc aac cgc cat acc			2400
Met Gly Val Leu Pro Leu Gln Phe Lys Pro Asp Thr Asn Arg His Thr			
	785	790	800
ctg caa ctg gac ggt acg gaa acc tac gac gtg gtc ggc gaa cgc aca			2448
Leu Gln Leu Asp Gly Thr Glu Thr Tyr Asp Val Val Gly Glu Arg Thr			
	805	810	815
ccg cgc tgc gac ctg acc ctc gtg att cac cgt aaa aac ggc gaa acc			2496
Pro Arg Cys Asp Leu Thr Leu Val Ile His Arg Lys Asn Gly Glu Thr			
	820	825	830
gtc gaa gtt ccc gtt acc tgc cgc ctc gat act gca gaa gaa gta ttg			2544
Val Glu Val Pro Val Thr Cys Arg Leu Asp Thr Ala Glu Glu Val Leu			
	835	840	845
gta tat gaa gcc ggc ggc gtg ttg caa cgg ttt gca cag gat ttt ttg			2592
Val Tyr Glu Ala Gly Gly Val Leu Gln Arg Phe Ala Gln Asp Phe Leu			
	850	855	860
gaa ggc aac gcg gct tag			2610
Glu Gly Asn Ala Ala			
865			

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 <211> 869  
 <212> PRT  
 <213> Neisseria meningitidis

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 Glu Tyr Tyr Asp Ala Arg Ala Ala Cys Glu Asp Ile Lys Pro Gly Ser  
 20 25 30  
 Tyr Asp Lys Leu Pro Tyr Thr Ser Arg Ile Leu Ala Glu Asn Leu Val  
 35 40 45  
 Asn Arg Ala Asp Lys Val Asp Leu Pro Thr Leu Gln Ser Trp Leu Gly



50

55

60

Gln Leu Ile Glu Gly Lys Gln Glu Ile Asp Phe Pro Trp Tyr Pro Ala  
 65 70 75 80  
 Arg Val Val Cys His Asp Ile Leu Gly Gln Thr Ala Leu Val Asp Leu  
 85 90 95  
 Ala Gly Leu Arg Asp Ala Ile Ala Glu Lys Gly Gly Asp Pro Ala Lys  
 100 105 110  
 Val Asn Pro Val Val Ala Lys Pro Ser Phe Ile Val Asp His Ser Leu  
 115 120 125  
 Ala Val Glu Cys Gly Gly Tyr Asp Pro Asp Ala Phe Arg Lys Asn Arg  
 130 135 140  
 Gln Ile Glu Asp Arg Arg Asn Glu Asp Arg Phe His Phe Ile Asn Trp  
 145 150 155 160  
 Thr Lys Thr Ala Phe Glu Asn Val Asp Val Ile Pro Ala Gly Asn Gly  
 165 170 175  
 Ile Met His Gln Ile Asn Leu Glu Lys Met Ser Pro Val Val Gln Val  
 180 185 190  
 Lys Asn Gly Val Ala Phe Pro Asp Thr Cys Val Gly Thr Asp Ser His  
 195 200 205  
 Thr Pro His Val Asp Ala Leu Gly Val Ile Ser Val Gly Val Gly Gly  
 210 215 220  
 Leu Glu Ala Glu Thr Val Met Leu Gly Arg Ala Ser Met Met Arg Leu  
 225 230 235 240  
 Pro Asp Ile Val Gly Val Glu Leu Asn Gly Lys Arg Gln Ala Gly Ile  
 245 250 255  
 Thr Ala Thr Asp Ile Val Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu  
 260 265 270  
 Arg Val Val Gly Ala Phe Val Glu Phe Phe Gly Glu Gly Ala Arg Ser  
 275 280 285  
 Leu Ser Ile Gly Asp Arg Ala Thr Ile Ser Asn Met Thr Pro Glu Phe  
 290 295 300  
 Gly Ala Thr Ala Ala Met Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr  
 305 310 315 320  
 Leu Lys Leu Thr Gly Arg Asp Asp Ala Gln Val Lys Leu Val Glu Thr  
 325 330 335  
 Tyr Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val  
 340 345 350  
 Tyr Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met  
 355 360 365  
 Ala Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala  
 370 375 380  
 Ser Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met  
 385 390 395 400  
 Pro Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr

0903043 08460  
 0903043 08460

405

410

415

Ser Asn Pro Arg Asn Val Val Ala Ala Ala Leu Leu Ala Arg Asn Ala  
 420 425 430  
 Asn Cys Phe Gly Leu Lys Arg Lys Pro Trp Val Lys Thr Ser Phe Ala  
 435 440 445  
 Pro Gly Ser Lys Val Ala Glu Ile Tyr Leu Lys Glu Ala Gly Leu Leu  
 450 455 460  
 Pro Glu Met Glu Lys Leu Gly Phe Gly Ile Val Ala Phe Ala Cys Thr  
 465 470 475 480  
 Thr Cys Asn Gly Met Ser Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu  
 485 490 495  
 Ile Ile Asp Arg Asp Leu Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg  
 500 505 510  
 Asn Phe Asp Gly Arg Val His Pro Tyr Ala Lys Gln Ala Phe Leu Ala  
 515 520 525  
 Ser Pro Pro Leu Val Val Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe  
 530 535 540  
 Asp Ile Glu Asn Asp Val Leu Gly Val Ala Asp Gly Lys Glu Ile Arg  
 545 550 555 560  
 Leu Lys Asp Ile Trp Pro Ala Asp Glu Glu Ile Asp Ala Val Val Ala  
 565 570 575  
 Glu Tyr Val Lys Pro Gln Gln Phe Arg Asp Val Tyr Val Pro Met Phe  
 580 585 590  
 Asp Thr Gly Thr Ala Gln Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg  
 595 600 605  
 Pro Met Ser Thr Tyr Ile Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu  
 610 615 620  
 Ala Gly Glu Arg Thr Leu Arg Gly Met Arg Pro Leu Ala Ile Leu Pro  
 625 630 635 640  
 Asp Asn Ile Thr Thr Asp His Leu Ser Pro Ser Asn Ala Ile Leu Ala  
 645 650 655  
 Val Ser Ala Ala Gly Glu Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu  
 660 665 670  
 Asp Phe Asn Ser Tyr Ala Thr His Arg Gly Asp His Leu Thr Ala Gln  
 675 680 685  
 Arg Ala Thr Phe Ala Asn Pro Lys Leu Phe Asn Glu Met Val Lys Asn  
 690 695 700  
 Glu Asp Gly Ser Val Arg Gln Gly Ser Phe Ala Arg Val Glu Pro Glu  
 705 710 715 720  
 Gly Glu Thr Met Arg Met Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg  
 725 730 735  
 Lys Gln Pro Leu Ile Ile Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser  
 740 745 750  
 Ser Arg Asp Trp Ala Ala Lys Gly Val Arg Leu Ala Gly Val Glu Ala

00304308160  
 00304308160





Pro Glu Asp Cys Phe  
385

<210> 44  
<211> 389  
<212> PRT  
<213> Neisseria meningitidis

<400> 44

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1 5 10 15  
Lys Gly Val Phe Phe Lys Arg Ser Asp Leu Pro Glu Ala Ala Arg Glu  
20 25 30  
Ala Gly Ser Ala Arg Asp Lys Ile Leu Leu Arg Val Leu Gly Ser Pro  
35 40 45  
Asp Pro Tyr Gly Lys Gln Ile Asp Gly Leu Gly Asn Ala Ser Ser Ser  
50 55 60  
Thr Ser Lys Ala Val Ile Leu Asp Lys Ser Glu Arg Thr Asp His Asp  
65 70 75 80  
Val Asp Tyr Leu Phe Gly Gln Val Ser Ile Asp Lys Pro Phe Val Asp  
85 90 95  
Trp Ser Gly Asn Cys Gly Asn Leu Thr Ala Ala Val Gly Ala Phe Ala  
100 105 110  
Ile Glu Gln Gly Leu Val Asp Lys Ser Lys Ile Pro Ser Asp Gly Pro  
115 120 125  
Cys Thr Val Lys Ile Trp Gln Lys Asn Ile Gly Lys Thr Ile Ile Ala  
130 135 140  
His Val Pro Met Gln Asn Gly Ala Val Leu Glu Thr Gly Asp Phe Glu  
145 150 155 160  
Leu Asp Gly Val Thr Phe Pro Ala Ala Glu Val Gln Ile Glu Phe Leu  
165 170 175  
Asp Pro Ala Asp Gly Glu Gly Ser Met Phe Pro Thr Gly Asn Leu Val  
180 185 190  
Asp Glu Ile Asp Val Pro Asn Ile Gly Arg Leu Lys Ala Thr Leu Ile  
195 200 205  
Asn Ala Gly Ile Pro Thr Val Phe Leu Asn Ala Ala Asp Leu Gly Tyr  
210 215 220  
Thr Gly Lys Glu Leu Gln Asp Asp Ile Asn Asn Asp Ala Ala Ala Leu  
225 230 235 240  
Glu Lys Phe Glu Lys Ile Arg Ala Tyr Gly Ala Leu Lys Met Gly Leu  
245 250 255  
Ile Ser Asp Val Ser Glu Ala Ala Ala Arg Ala His Thr Pro Lys Val  
260 265 270  
Ala Phe Val Ala Pro Ala Ala Asp Tyr Thr Ala Ser Ser Gly Lys Thr  
275 280 285  
Val Asn Ala Ala Asp Ile Asp Leu Leu Val Arg Ala Leu Ser Met Gly  
290 295 300

00820433 001604

Lys Leu His His Ala Met Gly Thr Ala Ser Val Ala Ile Thr  
305 315 320

Ala Ala Ala Val Pro Gly Thr Leu Val Asn Leu Ala Ala Gly Ala Gly  
325 330 335

Thr Arg Lys Glu Val Arg Phe Gly His Pro Ser Gly Thr Leu Arg Val  
340 345 350

Gly Ala Ala Ala Glu Cys Gln Asp Gly Gln Trp Thr Ala Thr Lys Ala  
355 360 365

Val	Met	Ser	Arg	Ser	Ala	Arg	Val	Met	Met	Glu	Gly	Trp	Val	Arg	Val
370						375						380			

Pro Glu Asp Cys Phe  
385

<210> 45

<211> 954

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1) .. (951)

<400> 45

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Met Arg Thr Pro Phe Cys Trp Ala Tyr Ala Asn Ala Ala Arg Ile Ser  
1 5 10 15

gca atg ctg ccg gcg tgt tgg gcg cag gcg atg ttg gcc gaa gta atc 96  
Ala Met Leu Pro Ala Cys Trp Ala Gln Ala Met Leu Ala Glu Val Ile  
20 25 30

agc tgc aac aag gct tcg tcg ctg ccg cag cct tcg gcg aga tcg gcg 144  
 Ser Cys Asn Lys Ala Ser Ser Leu Pro Gln Pro Ser Ala Arg Ser Ala  
 35 40 45

ttt aaa tca acc tgc ttc atg ggt gat tct ccg tat ttg gtt cag ata 192  
Phe Lys Ser Thr Cys Phe Met Gly Asp Ser Pro Tyr Leu Val Gln Ile  
50 55 60

gac ttg gtt ttt gcg ccg cag ggc ggt ggc ttc ttt caa gcc gat tat 240  
Asp Leu Val Phe Ala Pro Gln Gly Gly Gly Phe Phe Gln Ala Asp Tyr  
65 70 75 80

ttt gaa ttt gac ttt gct gcc gaa gcg cac ctg tgc cag cct gcc caa 288  
Phe Glu Phe Asp Phe Ala Ala Glu Ala His Leu Cys Gln Pro Ala Gln  
85 90 95

atc ggc ggc ggc aac ggt agc gat ttt cgg ata acc gcc ggt ggt ttg 336  
Ile Gly Gly Gly Asn Gly Ser Asp Phe Arg Ile Thr Ala Gly Gly Leu  
100 105 110

cgc atc ggc cag cag gat aat cgg ttt gcc gcc ggg cgg cac ctg cac 384  
Arg Ile Gly Gln Gln Asp Asn Arg Phe Ala Ala Gly Arg His Leu His  
115 120 125

ggt tcc tgc ctg aac agc gtg gga cag cat ttc caa agg ttg cga cag 432  
Gly Ser Cys Leu Asn Ser Val Gly Gln His Phe Gln Arg Leu Arg Gln  
130 135 140

ggt cag cgg ctg .tcc	gaa gcg gta gcc cat gcg gtt g	tc gct	480
Gly Gln Arg Leu Ser	Glu Ala Val Ala His Ala Val Al	Ile Ala	
145	150	155 160	
ttg cag cgt cca cgt ttc ccg ttc cag att cag acg ccc ttt ttc act	528		
Leu Gln Arg Pro Arg Phe Pro Phe Gln Ile Gln Thr Pro Phe Phe Thr	165 170 175		
gaa agc ggc ata ttc cga cga agg aac aag gtg gat ggt atc ggt aaa	576		
Glu Ser Gly Ile Phe Arg Arg Arg Asn Lys Val Asp Gly Ile Gly Lys	180 185 190		
cgg tat cgg ggc aat gcc gac ttt gga caa ttc ctg cgc acc ttt gcc	624		
Arg Tyr Arg Gly Asn Ala Asp Phe Gly Gln Phe Leu Arg Thr Phe Ala	195 200 205		
gat ggg gag ata atc gcc ttt ttg cag cat tct gcc ctg atg gcc gcc	672		
Asp Gly Glu Ile Ile Ala Phe Leu Gln His Ser Ala Leu Met Ala Ala	210 215 220		
gaa acc ggc ttt cag gtc ggt gct tct cga acc cat cac ttc cgg cac	720		
Glu Thr Gly Phe Gln Val Gly Ala Ser Arg Thr His His Phe Arg His	225 230 235 240		
atc aaa tcc gcc cgc cac gca cac ata gcc gta cat gcc ctg cac ggc	768		
Ile Lys Ser Ala Arg His Ala His Ile Ala Val His Ala Leu His Gly	245 250 255		
acg cac cat ttt caa ggt ctg ccc ttt gcg ggc ggt ata acg cca ata	816		
Thr His His Phe Gln Gly Leu Pro Phe Ala Gly Gly Ile Thr Pro Ile	260 265 270		
cga ata gac cgg ttc gcc gtc caa ttc cgc ctg ata cac ggc acc ggt	864		
Arg Ile Asp Arg Phe Ala Val Gln Phe Arg Leu Ile His Gly Thr Gly	275 280 285		
gag aca aaa cgg cgt atc ccg ttc aaa cac cag cat tat ccc gcc caa	912		
Glu Thr Lys Arg Arg Ile Pro Phe Lys His Gln His Tyr Pro Ala Gln	290 295 300		
agc gat ttc gat tgc ggc cgt gcc ttc gtc gtt gcc caa taa	954		
Ser Asp Phe Asp Cys Gly Arg Ala Phe Val Val Ala Gln	305 310 315		

<210> 46  
 <211> 317  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 46  
 Met Arg Thr Pro Phe Cys Trp Ala Tyr Ala Asn Ala Ala Arg Ile Ser  
 1 5 10 15  
 Ala Met Leu Pro Ala Cys Trp Ala Gln Ala Met Leu Ala Glu Val Ile  
 20 25 30  
 Ser Cys Asn Lys Ala Ser Ser Leu Pro Gln Pro Ser Ala Arg Ser Ala  
 35 40 45  
 Phe Lys Ser Thr Cys Phe Met Gly Asp Ser Pro Tyr Leu Val Gln Ile  
 50 55 60  
 Asp Leu Val Phe Ala Pro Gln Gly Gly Gly Phe Phe Gln Ala Asp Tyr  
 65 70 75 80

Phe Glu Phe Asp .Phe 85 Ala Glu Ala His Leu Cys Gln P 95 la Gln  
 Ile Gly Gly Gly Asn Gly Ser Asp Phe Arg Ile Thr Ala Gly Gly Leu  
 100 105 110  
 Arg Ile Gly Gln Gln Asp Asn Arg Phe Ala Ala Gly Arg His Leu His  
 115 120 125  
 Gly Ser Cys Leu Asn Ser Val Gly Gln His Phe Gln Arg Leu Arg Gln  
 130 135 140  
 Gly Gln Arg Leu Ser Val Glu Ala Val Ala His Ala Val Ala Ile Ala  
 145 150 155 160  
 Leu Gln Arg Pro Arg Phe Pro Phe Gln Ile Gln Thr Pro Phe Phe Thr  
 165 170 175  
 Glu Ser Gly Ile Phe Arg Arg Arg Asn Lys Val Asp Gly Ile Gly Lys  
 180 185 190  
 Arg Tyr Arg Gly Asn Ala Asp Phe Gly Gln Phe Leu Arg Thr Phe Ala  
 195 200 205  
 Asp Gly Glu Ile Ile Ala Phe Leu Gln His Ser Ala Leu Met Ala Ala  
 210 215 220  
 Glu Thr Gly Phe Gln Val Gly Ala Ser Arg Thr His His Phe Arg His  
 225 230 235 240  
 Ile Lys Ser Ala Arg His Ala His Ile Ala Val His Ala Leu His Gly  
 245 250 255  
 Thr His His Phe Gln Gly Leu Pro Phe Ala Gly Gly Ile Thr Pro Ile  
 260 265 270  
 Arg Ile Asp Arg Phe Ala Val Gln Phe Arg Leu Ile His Gly Thr Gly  
 275 280 285  
 Glu Thr Lys Arg Arg Ile Pro Phe Lys His Gln His Tyr Pro Ala Gln  
 290 295 300  
 Ser Asp Phe Asp Cys Gly Arg Ala Phe Val Val Ala Gln  
 305 310 315

<210> 47  
 <211> 648  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(645)

<400> 47  
 atg aga ata gag atc aca cca atc agc gaa tcc gct ttg gtc tgc cga 48  
 Met Arg Ile Glu Ile Thr Pro Ile Ser Glu Ser Ala Leu Val Cys Arg  
 1 5 10 15  
 ctg aat gcg cct tcc gaa ctg ggc aaa cag caa aag ttg tgg gcg ttt 96  
 Leu Asn Ala Pro Ser Glu Leu Gly Lys Gln Gln Lys Leu Trp Ala Phe  
 20 25 30

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gcc gct gcg ctc ggg cag cac gac agg att gag gaa gtg gtg gtc ggc	144
Ala Ala Ala Leu Gly His Asp Arg Ile Glu Glu Val Val Val Gly	
35 40 45	
atg aac aat ctg acc gtg ttc acc cgt ttc gat acc gat ttg gcg acg	192
Met Asn Asn Leu Thr Val Phe Thr Arg Phe Asp Thr Asp Leu Ala Thr	
50 55 60	
ctt gcc gat gaa ttg caa tat gtg tgg gaa cac acc gcc gtt aca gac	240
Leu Ala Asp Glu Leu Gln Tyr Val Trp Glu His Thr Ala Val Thr Asp	
65 70 75 80	
cat cag ggc aaa ctg gtg gaa att ccc gtc tgc tac ggc ggc gaa tac	288
His Gln Gly Lys Leu Val Glu Ile Pro Val Cys Tyr Gly Gly Glu Tyr	
85 90 95	
ggc ccg gat ttg gcg gaa gtc gct gct ttc cat cag acg gtt att tcc	336
Gly Pro Asp Leu Ala Glu Val Ala Ala Phe His Gln Thr Val Ile Ser	
100 105 110	
gaa atc gtc cgc cgc cat acg gcg caa act tat acc gta ttt atg atg	384
Glu Ile Val Arg Arg His Thr Ala Gln Thr Tyr Thr Val Phe Met Met	
115 120 125	
ggc ttc cag cct ggt ttc cct tat ctg ggc ggc ttg ccc gaa gca ttg	432
Gly Phe Gln Pro Gly Phe Pro Tyr Leu Gly Gly Leu Pro Glu Ala Leu	
130 135 140	
cac acg ccc cgc cgt gcc gtg ccg aga acg tcc gtt cct gcc ggt tcg	480
His Thr Pro Arg Arg Ala Val Pro Arg Thr Ser Val Pro Ala Gly Ser	
145 150 155 160	
gtc ggt atc ggc ggc agt cag acc ggt gtg tat ccg ttc gct tcg ccc	528
Val Gly Ile Gly Gly Ser Gln Thr Gly Val Tyr Pro Phe Ala Ser Pro	
165 170 175	
ggc ggc tgg cag att atc ggc aga acc gaa tta ccc ttg ttc cga gcc	576
Gly Gly Trp Gln Ile Ile Gly Arg Thr Glu Leu Pro Leu Phe Arg Ala	
180 185 190	
gat ttg aat ccg ccg acc ctg ctg gcg gcg ggt gac caa gtc cgc ttt	624
Asp Leu Asn Pro Pro Thr Leu Leu Ala Ala Gly Asp Gln Val Arg Phe	
195 200 205	
gtt gca gaa agg att gag cca tga	648
Val Ala Glu Arg Ile Glu Pro	
210 215	

<210> 48  
 <211> 215  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 48  
 Met Arg Ile Glu Ile Thr Pro Ile Ser Glu Ser Ala Leu Val Cys Arg  
 1 5 10 15  
 Leu Asn Ala Pro Ser Glu Leu Gly Lys Gln Gln Lys Leu Trp Ala Phe  
 20 25 30  
 Ala Ala Ala Leu Gly Gln His Asp Arg Ile Glu Glu Val Val Val Gly  
 35 40 45  
 Met Asn Asn Leu Thr Val Phe Thr Arg Phe Asp Thr Asp Leu Ala Thr  
 50 55 60

Leu Ala Asp Glu Leu Tyr Val Trp Glu His Thr Ala Val Asp  
 65 75 80  
 His Gln Gly Lys Leu Val Glu Ile Pro Val Cys Tyr Gly Gly Glu Tyr  
 85 90 95  
 Gly Pro Asp Leu Ala Glu Val Ala Ala Phe His Gln Thr Val Ile Ser  
 100 105 110  
 Glu Ile Val Arg Arg His Thr Ala Gln Thr Tyr Thr Val Phe Met Met  
 115 120 125  
 Gly Phe Gln Pro Gly Phe Pro Tyr Leu Gly Gly Leu Pro Glu Ala Leu  
 130 135 140  
 His Thr Pro Arg Arg Ala Val Pro Arg Thr Ser Val Pro Ala Gly Ser  
 145 150 155 160  
 Val Gly Ile Gly Gly Ser Gln Thr Gly Val Tyr Pro Phe Ala Ser Pro  
 165 170 175  
 Gly Gly Trp Gln Ile Ile Gly Arg Thr Glu Leu Pro Leu Phe Arg Ala  
 180 185 190  
 Asp Leu Asn Pro Pro Thr Leu Leu Ala Ala Gly Asp Gln Val Arg Phe  
 195 200 205  
 Val Ala Glu Arg Ile Glu Pro  
 210 215

<210> 49  
 <211> 930  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(927)

<400> 49  
 atg att cac gtt tcg gca gtg cag gca ccg gcg cat att cag gat acc 48  
 Met Ile His Val Ser Ala Val Gln Ala Pro Ala His Ile Gln Asp Thr  
 1 5 10 15  
 gga cgc tac gga cac cgg cgt tac ggc atc ggt cat gcc ggt gcg atg 96  
 Gly Arg Tyr Gly His Arg Arg Tyr Gly Ile Gly His Ala Gly Ala Met  
 20 25 30  
 gac acg gtt gct ttg gcg gcg ggt aat att tta ttg ggc aac gac gaa 144  
 Asp Thr Val Ala Leu Ala Ala Gly Asn Ile Leu Leu Gly Asn Asp Glu  
 35 40 45  
 ggc acg gcc gca atc gaa atc gct ttg ggc ggg ata atg ctg gtg ttt 192  
 Gly Thr Ala Ala Ile Glu Ile Ala Leu Gly Gly Ile Met Leu Val Phe  
 50 55 60  
 gaa cgg gat acg ccg ttt tgt ctc acc ggt gcc gtg tat cag gcg gaa 240  
 Glu Arg Asp Thr Pro Phe Cys Leu Thr Gly Ala Val Tyr Gln Ala Glu  
 65 70 75 80  
 ttg gac ggc gaa ccg gtc tat tcg tat tgg cgt tat acc gcc cgc aaa 288  
 Leu Asp Gly Glu Pro Val Tyr Ser Tyr Trp Arg Tyr Thr Ala Arg Lys  
 85 90 95

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ggg cag acc ttg aaa ggtg cgt gcc gtg cag ggc atg tat c tat	336
Gly Gln Thr Leu Lys Val Arg Ala Val Gln Gly Met Tyr Gly Tyr	
100 105 110	
gtg tgc gtg gcg ggc gga ttt gat gtg ccg gaa gtg atg ggt tgc aga	384
Val Cys Val Ala Gly Gly Phe Asp Val Pro Glu Val Met Gly Ser Arg	
115 120 125	
agc acc gac ctg aaa gcc ggt ttc ggc ggc cat cag ggc aga atg ctg	432
Ser Thr Asp Leu Lys Ala Gly Phe Gly Gly His Gln Gly Arg Met Leu	
130 135 140	
caa aaa ggc gat tat ctg ccc atc ggc aaa ggt gcg cag gaa ttg tcc	480
Gln Lys Gly Asp Tyr Leu Pro Ile Gly Lys Gly Ala Gln Glu Leu Ser	
145 150 155 160	
aaa gtc ggc att gcc ccg ata ccg ttt acc gat acc atc cac ctt gtt	528
Lys Val Gly Ile Ala Pro Ile Pro Phe Thr Asp Thr Ile His Leu Val	
165 170 175	
cct tgc tgc gaa tat gcc gct ttc agt gaa aaa ggc cgt ctg aat ctg	576
Pro Ser Ser Glu Tyr Ala Ala Phe Ser Glu Lys Gly Arg Leu Asn Leu	
180 185 190	
gaa cgg gaa acg tgg acg ctg caa agc gat agc aac cgc atg ggc tac	624
Glu Arg Glu Thr Trp Thr Leu Gln Ser Asp Ser Asn Arg Met Gly Tyr	
195 200 205	
cgc ttc gac gga cag ccg ctg acc ctg tgc caa cct ttg gaa atg ctg	672
Arg Phe Asp Gly Gln Pro Leu Thr Leu Ser Gln Pro Leu Glu Met Leu	
210 215 220	
tcc cac gct gtt cag gca gga acc gtg cag gtg ccg ccc ggc ggc aaa	720
Ser His Ala Val Gln Ala Gly Thr Val Gln Val Pro Pro Gly Gly Lys	
225 230 235 240	
ccg att atc ctg ctg gcc gat gcg caa acc acc ggc ggt tat ccg aaa	768
Pro Ile Ile Leu Leu Ala Asp Ala Gln Thr Thr Gly Gly Tyr Pro Lys	
245 250 255	
atc gct acc gtt gcc gcc gcc gat ttg ggc agg ctg gca cag gtg cgc	816
Ile Ala Thr Val Ala Ala Ala Asp Leu Gly Arg Leu Ala Gln Val Arg	
260 265 270	
ttc ggc agc aaa gtc aaa ttc aaa ata atc ggc ttg aaa gaa gcc acc	864
Phe Gly Ser Lys Val Lys Phe Lys Ile Ile Gly Leu Lys Glu Ala Thr	
275 280 285	
gcc ctg ccg cgc aaa aac caa gtc tat ctg aac caa ata ccg aga atc	912
Ala Leu Arg Arg Lys Asn Gln Val Tyr Leu Asn Gln Ile Arg Arg Ile	
290 295 300	
acc cat gaa gca ggt tga	930
Thr His Glu Ala Gly	
305	

<210> 50  
 <211> 309  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 50  
 Met Ile His Val Ser Ala Val Gln Ala Pro Ala His Ile Gln Asp Thr  
 1 5 10 15

Gly Arg Tyr Gly His Arg Tyr Gly Ile Gly His Ala Gly Ala Met  
20 25 30

Asp Thr Val Ala Leu Ala Ala Gly Asn Ile Leu Leu Gly Asn Asp Glu  
35 40 45

<221> CDS  
 <222> (1)..(20,91)

<400> 51

atg aat tcg acc gca agt aaa acc ctg aaa gga ttg tcg ctg gtg ttt	48
Met Asn Ser Thr Ala Ser Lys Thr Leu Lys Gly Leu Ser Leu Val Phe	
1 5 10 15	
ttc gcc tct gga ttc tgc gcc ctg att tac cag gtc agc tgg cag agg	96
Phe Ala Ser Gly Phe Cys Ala Leu Ile Tyr Gln Val Ser Trp Gln Arg	
20 25 30	
ctt cta ttc agt cac ata ggt atc gat ttg agt tcg att act gtc att	144
Leu Leu Phe Ser His Ile Gly Ile Asp Leu Ser Ser Ile Thr Val Ile	
35 40 45	
att tct gta ttt atg gtc ggc ttg ggt gta ggt gcg tat ttc ggt gga	192
Ile Ser Val Phe Met Val Gly Leu Gly Val Gly Ala Tyr Phe Gly Gly	
50 55 60	
cgc att gct gac cgt ttt cct tca agt atc atc ccc ctg ttt tgc atc	240
Arg Ile Ala Asp Arg Phe Pro Ser Ser Ile Ile Pro Leu Phe Cys Ile	
65 70 75 80	
gct gaa gta tcc atc ggt ctg ttc ggt ttg gta agc agg ggt ctg att	288
Ala Glu Val Ser Ile Gly Leu Phe Gly Leu Val Ser Arg Gly Leu Ile	
85 90 95	
tcc ggc ttg ggg cat ctt tta gtt gag gct gat ttg ccc atc atc gct	336
Ser Gly Leu Gly His Leu Leu Val Glu Ala Asp Leu Pro Ile Ile Ala	
100 105 110	
gct gcc aat ttc ctc tta ttg ctg ctt cct acc ttt atg atg ggc gcg	384
Ala Ala Asn Phe Leu Leu Leu Leu Pro Thr Phe Met Met Gly Ala	
115 120 125	
acc ttg ccc ttg ctg acc tgt ttt ttt aac cgg aaa ata cat aat gtt	432
Thr Leu Pro Leu Leu Thr Cys Phe Phe Asn Arg Lys Ile His Asn Val	
130 135 140	
ggc gag tct atc ggt acc tta tat ttt ttc aac act ttg ggt gcg gca	480
Gly Glu Ser Ile Gly Thr Leu Tyr Phe Phe Asn Thr Leu Gly Ala Ala	
145 150 155 160	
ctc gga tcg ctt gcc gcc gcc gaa ttt ttc tac gtc ttt ttt acc ctc	528
Leu Gly Ser Leu Ala Ala Ala Glu Phe Phe Tyr Val Phe Phe Thr Leu	
165 170 175	
tcc caa acc att gcg ctg aca gcc tgc ttt aac ctt ctg att gct gct	576
Ser Gln Thr Ile Ala Leu Thr Ala Cys Phe Asn Leu Leu Ile Ala Ala	
180 185 190	
tca gta tgc tgc gtt aca gaa agg atg gat ata gtg aac act aaa ccg	624
Ser Val Cys Cys Val Thr Glu Arg Met Asp Ile Val Asn Thr Lys Pro	
195 200 205	
aat act agt ttg att tat atg ctt tct ttc ctt agc ggc tta ttg agc	672
Asn Thr Ser Leu Ile Tyr Met Leu Ser Phe Leu Ser Gly Leu Leu Ser	
210 215 220	
ttg ggt ata gaa gtc ttg tgg gta agg atg ttt tcg ttc gca gca cag	720
Leu Gly Ile Glu Val Leu Trp Val Arg Met Phe Ser Phe Ala Ala Gln	
225 230 235 240	
tcc gtg cct cag gca ttt tca ttt act ctt gcc tat ttt ctg acc ggt	768
Ser Val Pro Gln Ala Phe Ser Phe Thr Leu Ala Tyr Phe Leu Thr Gly	

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atc	aat	ccg	gca	tac	cgt	agc	ctt	atc	gcg	gac	gag	ccg	caa	atc	gcc	1584
Ile	Asn	Pro	Ala	Tyr		Ser	Leu	Ile	Ala	Asp	Glu	Pro	Glu	Ile	Ala	
		515					520					525				
ccg	ctt	ttg	cag	gac	aaa	cgt	gtt	gaa	att	gta	ttg	gat	gac	ggg	agg	1632
Pro	Leu	Leu	Gln	Asp	Lys	Arg	Val	Glu	Ile	Val	Leu	Asp	Asp	Gly	Arg	
		530					535				540					
aaa	tgg	ctg	cgt	cgc	cat	cct	gat	gaa	aaa	ttc	gac	ctg	att	ttg	atg	1680
Lys	Trp	Leu	Arg	Arg	His	Pro	Asp	Glu	Lys	Phe	Asp	Leu	Ile	Leu	Met	
		545				550				555					560	
aat	acg	act	tgg	tac	tgg	cgt	gcc	tat	tcc	acc	aac	ctg	ttg	agt	gcg	1728
Asn	Thr	Thr	Trp	Tyr	Trp	Arg	Ala	Tyr	Ser	Thr	Asn	Leu	Leu	Ser	Ala	
				565					570					575		
gaa	ttt	tta	aaa	cag	gtg	caa	agc	cac	ctt	acc	ccg	gat	ggg	att	gta	1776
Glu	Phe	Leu	Lys	Gln	Val	Gln	Ser	His	Leu	Thr	Pro	Asp	Gly	Ile	Val	
			580					585					590			
atg	ttt	aat	acc	acg	cac	agc	ccg	cat	gct	ttt	gct	acc	gcc	gta	cac	1824
Met	Phe	Asn	Thr	Thr	His	Ser	Pro	His	Ala	Phe	Ala	Thr	Ala	Val	His	
		595					600					605				
agt	att	ccc	tat	gca	tac	cgc	tat	ggg	cat	atg	gta	gtc	ggc	tcg	gca	1872
Ser	Ile	Pro	Tyr	Ala	Tyr	Arg	Tyr	Gly	His	Met	Val	Val	Gly	Ser	Ala	
		610				615					620					
acc	ccg	gta	gtt	ttc	cct	aat	aaa	gaa	ctg	ctc	aag	caa	cgt	ctc	tcc	1920
Thr	Pro	Val	Val	Phe	Pro	Asn	Lys	Glu	Leu	Leu	Lys	Gln	Arg	Leu	Ser	
		625			630					635					640	
cgg	ttg	att	tgg	ccg	gaa	agc	ggc	agg	cac	gta	ttt	gac	agc	agc	acc	1968
Arg	Leu	Ile	Trp	Pro	Glu	Ser	Gly	Arg	His	Val	Phe	Asp	Ser	Ser	Thr	
				645					650					655		
gtg	gat	gct	gca	gca	caa	aag	gtt	gtc	tct	cgt	atg	ctg	att	cag	atg	2016
Val	Asp	Ala	Ala	Ala	Gln	Lys	Val	Val	Ser	Arg	Met	Leu	Ile	Gln	Met	
			660					665					670			
acg	gaa	cct	tcg	gct	ggg	gcg	gaa	gtc	att	acc	gac	gat	aat	atg	att	2064
Thr	Glu	Pro	Ser	Ala	Gly	Ala	Glu	Val	Ile	Thr	Asp	Asp	Asn	Met	Ile	
		675					680					685				
gta	gaa	tac	aaa	tac	ggc	aga	ggg	att	taa							2094
Val	Glu	Tyr	Lys	Tyr	Gly	Arg	Gly	Ile								
		690				695										

<210> 52

<211> 697

<212> PRT

<213> Neisseria meningitidis

<400> 52

Met	Asn	Ser	Thr	Ala	Ser	Lys	Thr	Leu	Lys	Gly	Leu	Ser	Leu	Val	Phe
1				5					10					15	

Phe	Ala	Ser	Gly	Phe	Cys	Ala	Leu	Ile	Tyr	Gln	Val	Ser	Trp	Gln	Arg
			20					25					30		

Leu	Leu	Phe	Ser	His	Ile	Gly	Ile	Asp	Leu	Ser	Ser	Ile	Thr	Val	Ile
		35					40					45			

Ile	Ser	Val	Phe	Met	Val	Gly	Leu	Gly	Val	Gly	Ala	Tyr	Phe	Gly	Gly
		50				55					60				

109180 109180 109180

Arg Ile Ala Asp Arg Phe Pro Ser Ser Ile Ile Pro Leu Phe Phe Ile  
 65 75 80  
 Ala Glu Val Ser Ile Gly Leu Phe Gly Leu Val Ser Arg Gly Leu Ile  
 85 90 95  
 Ser Gly Leu Gly His Leu Leu Val Glu Ala Asp Leu Pro Ile Ile Ala  
 100 105 110  
 Ala Ala Asn Phe Leu Leu Leu Leu Leu Pro Thr Phe Met Met Gly Ala  
 115 120 125  
 Thr Leu Pro Leu Leu Thr Cys Phe Phe Asn Arg Lys Ile His Asn Val  
 130 135 140  
 Gly Glu Ser Ile Gly Thr Leu Tyr Phe Phe Asn Thr Leu Gly Ala Ala  
 145 150 155 160  
 Leu Gly Ser Leu Ala Ala Ala Glu Phe Phe Tyr Val Phe Phe Thr Leu  
 165 170 175  
 Ser Gln Thr Ile Ala Leu Thr Ala Cys Phe Asn Leu Leu Ile Ala Ala  
 180 185 190  
 Ser Val Cys Cys Val Thr Glu Arg Met Asp Ile Val Asn Thr Lys Pro  
 195 200 205  
 Asn Thr Ser Leu Ile Tyr Met Leu Ser Phe Leu Ser Gly Leu Leu Ser  
 210 215 220  
 Leu Gly Ile Glu Val Leu Trp Val Arg Met Phe Ser Phe Ala Ala Gln  
 225 230 235 240  
 Ser Val Pro Gln Ala Phe Ser Phe Thr Leu Ala Tyr Phe Leu Thr Gly  
 245 250 255  
 Ile Ala Val Gly Ala Tyr Phe Gly Lys Arg Ile Cys Arg Ser Arg Phe  
 260 265 270  
 Val Asp Ile Pro Phe Ile Gly Gln Cys Phe Leu Trp Ala Gly Ile Ala  
 275 280 285  
 Asp Phe Leu Ile Leu Gly Ala Ala Trp Leu Leu Thr Gly Phe Ser Gly  
 290 295 300  
 Phe Val His His Ala Gly Ile Phe Ile Thr Leu Ser Ala Val Val Arg  
 305 310 315 320  
 Gly Leu Ile Phe Pro Leu Val His His Val Gly Thr Asp Gly Asn Lys  
 325 330 335  
 Ser Gly Arg Gln Val Ser Asn Val Tyr Phe Ala Asn Val Ala Gly Ser  
 340 345 350  
 Ala Leu Gly Pro Val Leu Ile Gly Phe Val Ile Leu Asp Phe Leu Ser  
 355 360 365  
 Thr Gln Gln Ile Tyr Leu Leu Ile Cys Leu Ile Ser Ala Ala Val Pro  
 370 375 380  
 Leu Phe Cys Thr Leu Phe Gln Lys Ser Leu Arg Leu Asn Ala Val Ser  
 385 390 395 400  
 Val Ala Val Ser Leu Met Phe Gly Ile Leu Met Phe Leu Leu Pro Asp  
 405 410 415

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Ser Val Phe Gln Asn Ala Asp Arg Pro Asp Arg Leu Ile Glu Asn  
 420 425 430  
 Lys His Gly Ile Val Ala Val Tyr His Arg Asp Gly Asp Lys Val Val  
 435 440 445  
 Tyr Gly Ala Asn Val Tyr Asp Gly Ala Tyr Asn Thr Asp Val Phe Asn  
 450 455 460  
 Ser Val Asn Gly Ile Glu Arg Ala Tyr Leu Leu Pro Ser Leu Lys Ser  
 465 470 475 480  
 Gly Ile Arg Arg Ile Phe Val Val Gly Leu Ser Thr Gly Ser Trp Ala  
 485 490 495  
 Arg Val Leu Ser Ala Ile Pro Glu Met Gln Ser Met Ile Val Ala Glu  
 500 505 510  
 Ile Asn Pro Ala Tyr Arg Ser Leu Ile Ala Asp Glu Pro Gln Ile Ala  
 515 520 525  
 Pro Leu Leu Gln Asp Lys Arg Val Glu Ile Val Leu Asp Asp Gly Arg  
 530 535 540  
 Lys Trp Leu Arg Arg His Pro Asp Glu Lys Phe Asp Leu Ile Leu Met  
 545 550 555 560  
 Asn Thr Thr Trp Tyr Trp Arg Ala Tyr Ser Thr Asn Leu Leu Ser Ala  
 565 570 575  
 Glu Phe Leu Lys Gln Val Gln Ser His Leu Thr Pro Asp Gly Ile Val  
 580 585 590  
 Met Phe Asn Thr Thr His Ser Pro His Ala Phe Ala Thr Ala Val His  
 595 600 605  
 Ser Ile Pro Tyr Ala Tyr Arg Tyr Gly His Met Val Val Gly Ser Ala  
 610 615 620  
 Thr Pro Val Val Phe Pro Asn Lys Glu Leu Leu Lys Gln Arg Leu Ser  
 625 630 635 640  
 Arg Leu Ile Trp Pro Glu Ser Gly Arg His Val Phe Asp Ser Ser Thr  
 645 650 655  
 Val Asp Ala Ala Ala Gln Lys Val Val Ser Arg Met Leu Ile Gln Met  
 660 665 670  
 Thr Glu Pro Ser Ala Gly Ala Glu Val Ile Thr Asp Asp Asn Met Ile  
 675 680 685  
 Val Glu Tyr Lys Tyr Gly Arg Gly Ile  
 690 695

<210> 53  
 <211> 1040  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 53  
 Cys Leu Gly Gly Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly  
 1 5 10 15

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Gly	Thr	Gly	Ile	Gly	Ser	Asn	Ser	Arg	Ala	Thr	Thr	Ala	Lys	Ser	Ala	20			25			30		
Ala	Val	Ser	Tyr	Ala	Gly	Ile	Lys	Asn	Glu	Met	Cys	Lys	Asp	Arg	Ser	35			40			45		
Met	Leu	Cys	Ala	Gly	Arg	Asp	Asp	Val	Ala	Val	Thr	Asp	Arg	Asp	Ala	50			55			60		
Lys	Ile	Asn	Ala	Pro	Pro	Pro	Asn	Leu	His	Thr	Gly	Asp	Phe	Thr	Asn	65			70			75		80
Pro	Asn	Asp	Ala	Tyr	Lys	Asn	Leu	Ile	Asn	Leu	Lys	Pro	Ala	Ile	Glu	85			90			95		
Ala	Gly	Tyr	Thr	Gly	Arg	Gly	Val	Glu	Val	Gly	Ile	Val	Asp	Thr	Gly	100			105			110		
Glu	Ser	Val	Gly	Ser	Ile	Ser	Phe	Pro	Glu	Leu	Tyr	Gly	Arg	Lys	Glu	115			120			125		
His	Gly	Tyr	Asn	Glu	Asn	Tyr	Lys	Asn	Tyr	Thr	Ala	Tyr	Met	Arg	Lys	130			135			140		
Glu	Ala	Pro	Glu	Asp	Gly	Gly	Lys	Asp	Ile	Lys	Ala	Ser	Phe	Asp		145			150			155		160
Asp	Glu	Ala	Val	Ile	Glu	Thr	Glu	Ala	Lys	Pro	Thr	Asp	Ile	Arg	His	165			170			175		
Val	Lys	Glu	Ile	Gly	His	Ile	Asp	Val	Val	Ser	His	Ile	Ile	Gly	Gly	180			185			190		
Arg	Ser	Val	Asp	Gly	Arg	Pro	Ala	Gly	Gly	Ile	Ala	Pro	Asp	Ala	Thr	195			200			205		
Leu	His	Ile	Met	Asn	Thr	His	Asp	Gly	Thr	Lys	Asn	Glu	Ile	Met	Ser	210			215			220		
Ala	Ala	Ile	Arg	Asn	Ala	Trp	Val	Lys	Leu	Gly	Glu	Arg	Gly	Val	Arg	225			230			235		240
Ile	Val	Asn	Asn	Ser	Phe	Gly	Thr	Thr	Ser	Arg	Ala	Gly	Thr	Ala	Asp	245			250			255		
His	Phe	Gln	Ile	Ala	Asn	Ser	Glu	Glu	Gln	Tyr	Arg	Gln	Ala	Leu	Leu	260			265			270		
Ala	Tyr	Ser	Gly	Gly	Asp	Lys	Thr	Asp	Glu	Gly	Ile	Arg	Leu	Met	Gln	275			280			285		
Gln	Ser	Asp	Tyr	Gly	Asn	Leu	Ser	Tyr	His	Ile	Arg	Asn	Lys	Asn	Met	290			295			300		
Leu	Phe	Ile	Phe	Ser	Ala	Ser	Asn	Asp	Ala	Gln	Ala	Gln	Pro	Asn	Thr	305			310			315		320
Leu	Thr	Leu	Leu	Pro	Phe	Tyr	Glu	Lys	Asp	Ala	Gln	Lys	Gly	Ile	Ile	325			330			335		
Thr	Val	Ala	Gly	Val	Asp	Arg	Ser	Gly	Glu	Lys	Phe	Asn	Gly	Ser	Asn	340			345			350		
His	Cys	Gly	Ile	Thr	Ala	Met	Trp	Cys	Leu	Ser	Ala	Pro	Tyr	Glu	Ala	355			360			365		

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Ser	Val	Arg	Phe	Thr	Arg	Thr	Asn	Pro	Ile	Gln	Ile	Ala	Gly	Thr	Ser	370			5			380					
Phe	Ser	Ala	Pro	Ile	Val	Thr	Gly	Thr	Ala	Ala	Leu	Leu	Leu	Gln	Lys	385			390			395					400
Tyr	Pro	Trp	Met	Ser	Asn	Asp	Asn	Leu	Arg	Thr	Thr	Leu	Leu	Thr	Thr	405					410					415	
Ala	Gln	Asp	Ile	Gly	Ala	Val	Gly	Val	Asp	Ser	Lys	Phe	Gly	Trp	Gly	420					425				430		
Leu	Leu	Asp	Ala	Gly	Lys	Ala	Met	Asn	Gly	Pro	Ala	Ser	Phe	Pro	Phe	435					440				445		
Gly	Asp	Phe	Thr	Ala	Asp	Thr	Lys	Gly	Thr	Ser	Asp	Ile	Ala	Tyr	Ser	450					455				460		
Phe	Arg	Asn	Asp	Ile	Ser	Gly	Thr	Gly	Gly	Leu	Ile	Lys	Lys	Gly	Gly	465						475				480	
Ser	Gln	Leu	Gln	Leu	His	Gly	Asn	Asn	Thr	Tyr	Thr	Gly	Lys	Thr	Ile	485						490				495	
Ile	Glu	Gly	Gly	Ser	Leu	Val	Leu	Tyr	Gly	Asn	Asn	Lys	Ser	Asp	Met	500						505				510	
Arg	Val	Glu	Thr	Lys	Gly	Ala	Leu	Ile	Tyr	Asn	Gly	Ala	Ala	Ser	Gly	515						520				525	
Gly	Ser	Leu	Asn	Ser	Asp	Gly	Ile	Val	Tyr	Leu	Ala	Asp	Thr	Asp	Arg	530							540				
Ser	Gly	Ala	Asn	Glu	Thr	Val	His	Ile	Lys	Gly	Asp	Leu	Gln	Leu	Gly	545						555				560	
Gly	Glu	Gly	Thr	Leu	Tyr	Thr	Arg	Leu	Gly	Lys	Leu	Leu	Lys	Val	Asp	565						570				575	
Gly	Thr	Ala	Met	Thr	Gly	Gly	Lys	Leu	Tyr	Met	Ser	Ala	Arg	Gly	Lys	580							585			590	
Gly	Ala	Gly	Tyr	Leu	Asn	Arg	Thr	Gly	Gln	Arg	Val	Pro	Phe	Leu	Ser	595							600			605	
Ala	Ala	Lys	Ile	Gly	Arg	Asp	Tyr	Ser	Phe	Phe	Thr	Asn	Ile	Glu	Thr	610							615			620	
Asp	Gly	Gly	Leu	Leu	Ala	Ser	Leu	Asp	Ser	Val	Glu	Lys	Thr	Ala	Gly	625						635				640	
Ser	Glu	Gly	Asp	Thr	Leu	Ser	Tyr	Tyr	Val	Arg	Arg	Gly	Asn	Ala	Ala	645						650				655	
Arg	Thr	Ala	Ser	Ala	Ala	Ala	His	Ser	Ala	Pro	Ala	Gly	Leu	Lys	His	660							665			670	
Ala	Val	Glu	Gln	Gly	Gly	Ser	Asn	Leu	Glu	Asn	Leu	Met	Val	Glu	Leu	675							680			685	
Asp	Ala	Ser	Glu	Ser	Ser	Ala	Thr	Pro	Glu	Thr	Val	Glu	Thr	Ala	Ala	690							695			700	
Ala	Asp	Arg	Thr	Asp	Met	Pro	Gly	Ile	Arg	Pro	Tyr	Gly	Ala	Thr	Phe	705							715			720	

Arg	Ala	Ala	Ala	Ala	Val	Gln	His	Ala	Asn	Ala	Ala	Asp	Gly	Val	Arg	725	730
Ile	Phe	Asn	Ser	Leu	Ala	Ala	Thr	Val	Tyr	Ala	Asp	Ser	Thr	Ala	Ala	740	745 750
His	Ala	Asp	Met	Gln	Gly	Arg	Arg	Leu	Lys	Ala	Val	Ser	Asp	Gly	Leu	755	760 765
Asp	His	Asn	Ala	Thr	Gly	Leu	Arg	Val	Ile	Ala	Gln	Thr	Gln	Gln	Asp	770	775 780
Gly	Gly	Thr	Trp	Glu	Gln	Gly	Gly	Val	Glu	Gly	Lys	Met	Arg	Gly	Ser	785	790 795 800
Thr	Gln	Thr	Val	Gly	Ile	Ala	Ala	Lys	Thr	Gly	Glu	Asn	Thr	Thr	Ala	805	810 815
Ala	Ala	Thr	Leu	Gly	Met	Gly	His	Ser	Thr	Trp	Ser	Glu	Asn	Ser	Ala	820	825 830
Asn	Ala	Lys	Thr	Asp	Ser	Ile	Ser	Leu	Phe	Ala	Gly	Ile	Arg	His	Asp	835	840 845
Ala	Gly	Asp	Ile	Gly	Tyr	Leu	Lys	Gly	Leu	Phe	Ser	Tyr	Gly	Arg	Tyr	850	855 860
Lys	Asn	Ser	Ile	Ser	Arg	Ser	Thr	Gly	Ala	Asp	Glu	His	Ala	Glu	Gly	865	870 875 880
Ser	Val	Asn	Gly	Thr	Leu	Met	Gln	Leu	Gly	Ala	Leu	Gly	Gly	Val	Asn	885	890 895
Val	Pro	Phe	Ala	Ala	Thr	Gly	Asp	Leu	Thr	Val	Glu	Gly	Gly	Leu	Arg	900	905 910
Tyr	Asp	Leu	Leu	Lys	Gln	Asp	Ala	Phe	Ala	Glu	Lys	Gly	Ser	Ala	Leu	915	920 925
Gly	Trp	Ser	Gly	Asn	Ser	Leu	Thr	Glu	Gly	Thr	Leu	Val	Gly	Leu	Ala	930	935 940
Gly	Leu	Lys	Leu	Ser	Gln	Pro	Leu	Ser	Asp	Lys	Ala	Val	Leu	Phe	Ala	945	950 955 960
Thr	Ala	Gly	Val	Glu	Arg	Asp	Leu	Asn	Gly	Arg	Asp	Tyr	Thr	Val	Thr	965	970 975
Gly	Gly	Phe	Thr	Gly	Ala	Thr	Ala	Ala	Thr	Gly	Lys	Thr	Gly	Ala	Arg	980	985 990
Asn	Met	Pro	His	Thr	Arg	Leu	Val	Ala	Gly	Leu	Gly	Ala	Asp	Val	Glu	995	1000 1005
Phe	Gly	Asn	Gly	Trp	Asn	Gly	Leu	Ala	Arg	Tyr	Ser	Tyr	Ala	Gly	Ser	1010	1015 1020
Lys	Gln	Tyr	Gly	Asn	His	Ser	Gly	Arg	Val	Gly	Val	Gly	Tyr	Arg	Phe	1025	1030 1035 1040

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 <213> Neisseria gonorrhoeae

<220>  
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<400> 54

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Met Ser Glu Glu Lys Leu Lys Met Ser Phe Glu Pro Thr Val Ile Glu	
1 5 10 15	
cat ttg ggt gta aag atg tat tcg cac act gtt cct gcg att gcc gag	96
His Leu Gly Val Lys Met Tyr Ser His Thr Val Pro Ala Ile Ala Glu	
20 25 30	
ttg ata gcg aat gcc tac gat gca tgt gct acg gaa gtg gaa gtt agg	144
Leu Ile Ala Asn Ala Tyr Asp Ala Cys Ala Thr Glu Val Glu Val Arg	
35 40 45	
tta ttc gat aaa ccg gag cat aaa atc gtt att aaa gat aat ggc ata	192
Leu Phe Asp Lys Pro Glu His Lys Ile Val Ile Lys Asp Asn Gly Ile	
50 55 60	
gga atg agc ttc gat gaa atc aat gat ttt tat ttg aga atc ggt cgg	240
Gly Met Ser Phe Asp Glu Ile Asn Asp Phe Tyr Leu Arg Ile Gly Arg	
65 70 75 80	
aac aga agg gaa gaa aaa caa gcc tcc ccg tgc gga aga att cca acg	288
Asn Arg Arg Glu Glu Lys Gln Ala Ser Pro Cys Gly Arg Ile Pro Thr	
85 90 95	
ggg aaa aaa ggt ctt ggt aaa ttg gca tta ttc agg ctt ggc aac aaa	336
Gly Lys Lys Gly Leu Gly Lys Leu Ala Leu Phe Arg Leu Gly Asn Lys	
100 105 110	
atc gaa atc tct act atc caa gga aac gaa cgg gtt act ttt act ttg	384
Ile Glu Ile Ser Thr Ile Gln Gly Asn Glu Arg Val Thr Phe Thr Leu	
115 120 125	
gat tat gca gag att aaa aaa agt gag cgt att tat caa ccg gag ttt	432
Asp Tyr Ala Glu Ile Lys Lys Ser Glu Arg Ile Tyr Gln Pro Glu Phe	
130 135 140	
cag aaa gag tct gtt aaa ccc aat acc gaa aac gga aca act ata act	480
Gln Lys Glu Ser Val Lys Pro Asn Thr Glu Asn Gly Thr Thr Ile Thr	
145 150 155 160	
tta acc gag ctg acg aaa aaa caa gga tac ccg tta gat aat tat gtg	528
Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val	
165 170 175	
ggg cat ctt tcc cgt tta ttt gat ttt ccg gct cag gat ttt aaa atc	576
Gly His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile	
180 185 190	
aaa gta agc ttg aac ggc tcg gaa cca aga atc att gac gga aac cta	624
Lys Val Ser Leu Asn Gly Ser Glu Pro Arg Ile Ile Asp Gly Asn Leu	
195 200 205	
aaa tat aat ctt gtt acc cca caa ttc gaa tgg gaa tac cag gat cta	672
Lys Tyr Asn Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu	
210 215 220	
gca acc aat att tca tcg tta tct tca aaa ttc gaa cag tat gaa tac	720

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Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr	
225 . . 230 235 240	
agc gga tta ata caa ggt aag ttc att aca acg gaa aaa cct tta aag	768
Ser Gly Leu Ile Gln Gly Lys Phe Ile Thr Thr Glu Lys Pro Leu Lys	
245 250 255	
aat aat atg aaa ggt att acc ttg ttt gcc aac ggc aga atg gta aat	816
Asn Asn Met Lys Gly Ile Thr Leu Phe Ala Asn Gly Arg Met Val Asn	
260 265 270	
atg ccc gag ttt ttc act gat agc gaa tcc agc cat ttc taa	858
Met Pro Glu Phe Phe Thr Asp Ser Glu Ser Ser His Phe	
275 280 285	

<210> 55  
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 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 55

Met Ser Glu Glu Lys Leu Lys Met Ser Phe Glu Pro Thr Val Ile Glu	
1 5 10 15	
His Leu Gly Val Lys Met Tyr Ser His Thr Val Pro Ala Ile Ala Glu	
20 25 30	
Leu Ile Ala Asn Ala Tyr Asp Ala Cys Ala Thr Glu Val Glu Val Arg	
35 40 45	
Leu Phe Asp Lys Pro Glu His Lys Ile Val Ile Lys Asp Asn Gly Ile	
50 55 60	
Gly Met Ser Phe Asp Glu Ile Asn Asp Phe Tyr Leu Arg Ile Gly Arg	
65 70 75 80	
Asn Arg Arg Glu Glu Lys Gln Ala Ser Pro Cys Gly Arg Ile Pro Thr	
85 90 95	
Gly Lys Lys Gly Leu Gly Lys Leu Ala Leu Phe Arg Leu Gly Asn Lys	
100 105 110	
Ile Glu Ile Ser Thr Ile Gln Gly Asn Glu Arg Val Thr Phe Thr Leu	
115 120 125	
Asp Tyr Ala Glu Ile Lys Lys Ser Glu Arg Ile Tyr Gln Pro Glu Phe	
130 135 140	
Gln Lys Glu Ser Val Lys Pro Asn Thr Glu Asn Gly Thr Thr Ile Thr	
145 150 155 160	
Leu Thr Glu Leu Thr Lys Lys Gln Gly Tyr Pro Leu Asp Asn Tyr Val	
165 170 175	
Gly His Leu Ser Arg Leu Phe Asp Phe Pro Ala Gln Asp Phe Lys Ile	
180 185 190	
Lys Val Ser Leu Asn Gly Ser Glu Pro Arg Ile Ile Asp Gly Asn Leu	
195 200 205	
Lys Tyr Asn Leu Val Thr Pro Gln Phe Glu Trp Glu Tyr Gln Asp Leu	
210 215 220	
Ala Thr Asn Ile Ser Ser Leu Ser Ser Lys Phe Glu Gln Tyr Glu Tyr	
225 230 235 240	

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Ser Gly Leu Ile Gln Gly Phe Ile Thr Thr Glu Lys Pro Ile Lys  
 245 250  
 Asn Asn Met Lys Gly Ile Thr Leu Phe Ala Asn Gly Arg Met Val Asn  
 260 265 270  
 Met Pro Glu Phe Phe Thr Asp Ser Glu Ser Ser His Phe  
 275 280 285

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 <213> Neisseria gonorrhoeae

<220>  
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 atg aaa aaa tcc ctt ttc gtt ctc ttt ctg tat tca tcc cta ctt acc 48  
 Met Lys Lys Ser Leu Phe Val Leu Phe Leu Tyr Ser Ser Leu Leu Thr  
 1 5 10 15  
 gcc agc gaa atc gcc tat cgc ttt gta ttc gga att gaa acc tta ccg 96  
 Ala Ser Glu Ile Ala Tyr Arg Phe Val Phe Gly Ile Glu Thr Leu Pro  
 20 25 30  
 gct gca aaa atg gcg gaa acg ttt gcg ctg aca ttt atg att gct gcg 144  
 Ala Ala Lys Met Ala Glu Thr Phe Ala Leu Thr Phe Met Ile Ala Ala  
 35 40 45  
 ctg tat ctg ttt gcg cgt tat aag gct tcg cgg ctg ctg att gcg gtg 192  
 Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val  
 50 55 60  
 ttt ttc gcg ttc agc atg att gcc aac aat gtg cat tac gcg gtt tat 240  
 Phe Phe Ala Phe Ser Met Ile Ala Asn Asn Val His Tyr Ala Val Tyr  
 65 70 75 80  
 caa agc tgg atg acg ggt att aac tat tgg ctg atg ctg aaa gag gtt 288  
 Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Val  
 85 90 95  
 acc gaa gtc ggc agc gcg ggc gcg tcg atg ttg gat aag ttg tgg ctg 336  
 Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu  
 100 105 110  
 cct gct ttg tgg ggc gtg gcg gaa gtc atg ttg ttt tgc agc ctt gcc 384  
 Pro Ala Leu Trp Gly Val Ala Glu Val Met Leu Phe Cys Ser Leu Ala  
 115 120 125  
 aag ttc cgc cgt aag acg cat ttt tct gcc gat ata ctg ttt gcc ttc 432  
 Lys Phe Arg Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe  
 130 135 140  
 cta atg ctg atg att ttc gtg cgt tcg ttc gac acg aaa caa gag cac 480  
 Leu Met Leu Met Ile Phe Val Arg Ser Phe Asp Thr Lys Gln Glu His  
 145 150 155 160  
 ggt att tcg ccc aaa ccg aca tac agc cgc atc aaa gcc aat tat ttc 528  
 Gly Ile Ser Pro Lys Pro Thr Tyr Ser Arg Ile Lys Ala Asn Tyr Phe  
 165 170 175

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435

440

445

ctg gtt ttg tac agc ccg t aag gcc gtg caa cag gct gcc a cag 1392  
 Leu Val Leu Tyr Ser Pro Asp Lys Ala Val Gln Gln Ala Ala Asn Gln  
 450 455 460

gct ttt gcg cct tgc gag att gcc ttc cat cag cag ctt tca acg ttc 1440  
 Ala Phe Ala Pro Cys Glu Ile Ala Phe His Gln Gln Leu Ser Thr Phe  
 465 470 475 480

ctg att cac acg ttg ggc tac gat atg ccg gtt tca ggt tgt cgc gaa 1488  
 Leu Ile His Thr Leu Gly Tyr Asp Met Pro Val Ser Gly Cys Arg Glu  
 485 490 495

ggc tcg gta aca ggc aac ctg att acg ggc gat gca ggc agc ttg aac 1536  
 Gly Ser Val Thr Gly Asn Leu Ile Thr Gly Asp Ala Gly Ser Leu Asn  
 500 505 510

att cgc aac ggc aag gcg gaa tat gtt tat ccg caa taa 1575  
 Ile Arg Asn Gly Lys Ala Glu Tyr Val Tyr Pro Gln  
 515 520

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<211> 524

<212> PRT

<213> Neisseria gonorrhoeae

<400> 57

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Ala Ser Glu Ile Ala Tyr Arg Phe Val Phe Gly Ile Glu Thr Leu Pro  
 20 25 30

Ala Ala Lys Met Ala Glu Thr Phe Ala Leu Thr Phe Met Ile Ala Ala  
 35 40 45

Leu Tyr Leu Phe Ala Arg Tyr Lys Ala Ser Arg Leu Leu Ile Ala Val  
 50 55 60

Phe Phe Ala Phe Ser Met Ile Ala Asn Asn Val His Tyr Ala Val Tyr  
 65 70 75 80

Gln Ser Trp Met Thr Gly Ile Asn Tyr Trp Leu Met Leu Lys Glu Val  
 85 90 95

Thr Glu Val Gly Ser Ala Gly Ala Ser Met Leu Asp Lys Leu Trp Leu  
 100 105 110

Pro Ala Leu Trp Gly Val Ala Glu Val Met Leu Phe Cys Ser Leu Ala  
 115 120 125

Lys Phe Arg Arg Lys Thr His Phe Ser Ala Asp Ile Leu Phe Ala Phe  
 130 135 140

Leu Met Leu Met Ile Phe Val Arg Ser Phe Asp Thr Lys Gln Glu His  
 145 150 155 160

Gly Ile Ser Pro Lys Pro Thr Tyr Ser Arg Ile Lys Ala Asn Tyr Phe  
 165 170 175

Ser Phe Gly Tyr Phe Val Gly Arg Val Leu Pro Tyr Gln Leu Phe Asp  
 180 185 190

Leu Ser Lys Ile Pro Val Phe Lys Gln Pro Ala Pro Ser Lys Ile Gly

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205

Gln 210	Gly	Ser	Ile	Gln	Asn	Leu	Val	Leu	Ile	Met	Gly	Glu	Ser	Pro	Ser
Ala 225	Ala	His	Leu	Lys	Leu	Phe	Gly	Tyr	Gly	Arg	Glu	Thr	Ser	Pro	Phe
Leu	Thr	Arg	Leu	Ser	Gln	Ala	Asp	Phe	Lys	Pro	Ile	Val	Lys	Gln	Ser
Tyr	Ser	Ala	Gly	Phe	Met	Thr	Ala	Val	Ser	Leu	Pro	Ser	Phe	Phe	Asn
Val	Ile	Pro	His	Ala	Asn	Gly	Leu	Glu	Gln	Ile	Ser	Gly	Gly	Asp	Thr
Asn	Met	Phe	Arg	Leu	Ala	Lys	Glu	Gln	Gly	Tyr	Glu	Thr	Tyr	Phe	Tyr
Ser 305	Ala	Gln	Ala	Glu	Asn	Gln	Met	Ala	Ile	Leu	Asn	Leu	Ile	Gly	Lys
Lys	Trp	Ile	Asp	His	Leu	Ile	Gln	Pro	Thr	Gln	Leu	Gly	Tyr	Gly	Asn
Gly	Asp	Asn	Met	Pro	Asp	Glu	Lys	Leu	Leu	Pro	Leu	Phe	Asp	Lys	Ile
Asn	Leu	Gln	Gln	Gly	Arg	His	Phe	Ile	Val	Leu	His	Gln	Arg	Gly	Ser
His	Ala	Pro	Tyr	Gly	Ala	Leu	Leu	Gln	Pro	Gln	Asp	Lys	Val	Phe	Gly
Glu 385	Ala	Asp	Ile	Val	Asp	Lys	Tyr	Asp	Asn	Thr	Ile	His	Lys	Thr	Asp
Gln	Met	Ile	Gln	Thr	Val	Phe	Glu	Gln	Leu	Gln	Lys	Gln	Pro	Asp	Gly
Asn	Trp	Leu	Phe	Ala	Tyr	Thr	Ser	Asp	His	Gly	Gln	Tyr	Val	Arg	Gln
Asp	Ile	Tyr	Asn	Gln	Gly	Thr	Val	Gln	Pro	Asp	Ser	Tyr	Ile	Val	Pro
Leu	Val	Leu	Tyr	Ser	Pro	Asp	Lys	Ala	Val	Gln	Gln	Ala	Ala	Asn	Gln
Ala 465	Phe	Ala	Pro	Cys	Glu	Ile	Ala	Phe	His	Gln	Gln	Leu	Ser	Thr	Phe
Leu	Ile	His	Thr	Leu	Gly	Tyr	Asp	Met	Pro	Val	Ser	Gly	Cys	Arg	Glu
Gly	Ser	Val	Thr	Gly	Asn	Leu	Ile	Thr	Gly	Asp	Ala	Gly	Ser	Leu	Asn
Ile	Arg	Asn	Gly	Lys	Ala	Glu	Tyr	Val	Tyr	Pro	Gln				

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<211> 1314

<212> DNA  
<213> Neisseria gonorrhoeae

<220>  
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<222> (1)..(1311)

<400> 58

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1 5 10 15	
ttg ctg acg gaa aaa gtg tcg ccc atc atc gca tta atc ttg gtg ccg	96
Leu Leu Thr Glu Lys Val Ser Pro Ile Ile Ala Leu Ile Leu Val Pro	
20 25 30	
ctg att ggg gcg ttg ctg gcg ggg ttt gat gta tcc caa tta aaa gaa	144
Leu Ile Gly Ala Leu Leu Ala Gly Phe Asp Val Ser Gln Leu Lys Glu	
35 40 45	
ttt tat tcg ggc ggc acg aaa tcg gtg acg cag att gtg att atg ttt	192
Phe Tyr Ser Gly Gly Thr Lys Ser Val Thr Gln Ile Val Ile Met Phe	
50 55 60	
atg ttt tcc att ttg ttt ttt gga atc atg aac gat gtg ggg ctg ttc	240
Met Phe Ser Ile Leu Phe Phe Gly Ile Met Asn Asp Val Gly Leu Phe	
65 70 75 80	
cgt ccg atg ata ggc ggt ttg att aag ctg act cgg ggt aat atc gtg	288
Arg Pro Met Ile Gly Gly Leu Ile Lys Leu Thr Arg Gly Asn Ile Val	
85 90 95	
gca gtg agt gtg ggg acg gtc ttg gtg tcg gtg gtg gca cag ttg gac	336
Ala Val Ser Val Gly Thr Val Leu Val Ser Val Val Ala Gln Leu Asp	
100 105 110	
ggg gcg ggc gcg acg acg ttt tta tcg gtc gtc ccc gcc ctt ttg ccg	384
Gly Ala Gly Ala Thr Thr Phe Leu Ser Val Val Pro Ala Leu Leu Pro	
115 120 125	
ctt tac aag cgt ctg cat atg aat cct tac ctg ctg ttt ttg ctg ctg	432
Leu Tyr Lys Arg Leu His Met Asn Pro Tyr Leu Leu Phe Leu Leu Leu	
130 135 140	
act tcc agc gcg ggg cta atc aac ctt ttg ccg cgg ggc ggg ccg atc	480
Thr Ser Ser Ala Gly Leu Ile Asn Leu Leu Pro Arg Gly Gly Pro Ile	
145 150 155 160	
ggg cgg gtt gca agc gtg ttg ggc gca gat gtg ggc gaa ttg tat aaa	528
Gly Arg Val Ala Ser Val Leu Gly Ala Asp Val Gly Glu Leu Tyr Lys	
165 170 175	
cct ttg ttg acg gtg caa att atc ggt gtg gtg ttt atc ctt gtg ctg	576
Pro Leu Leu Thr Val Gln Ile Ile Gly Val Val Phe Ile Leu Val Leu	
180 185 190	
tcc ctg ttt ttg ggt gtg cgt gaa aaa agg cgg att gtc cgg gag ttg	624
Ser Leu Phe Leu Gly Val Arg Glu Lys Arg Arg Ile Val Arg Glu Leu	
195 200 205	
ggc gcg ttg ccc gcc gtg gcg gat ttg ata aag ccg gcg cct ttg tcg	672
Gly Ala Leu Pro Ala Val Ala Asp Leu Ile Lys Pro Ala Pro Leu Ser	
210 215 220	
gaa gaa gaa caa aaa ttg gcg cgt ccg aaa ctg ttt tgg tgg aat gtc	720
Glu Glu Glu Gln Lys Leu Ala Arg Pro Lys Leu Phe Trp Trp Asn Val	

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225	230	235	240	
ctg ctg ttt ttg gcg gcg agc ctg ctt ttt tcg ggc atc ccg	768			
Leu Leu Phe Leu Ala Ala Met Ser Leu Leu Phe Ser Gly Ile Phe Pro				
245 250 255				
ccg ggt tat gta ttt atg ctg gct gca acg gcg gcg ttg ctt ttg aat	816			
Pro Gly Tyr Val Phe Met Leu Ala Ala Thr Ala Ala Leu Leu Leu Asn				
260 265 270				
tac cgc agc ccg cag gaa cag atg gag cgg att tat gcc cac gcc ggc	864			
Tyr Arg Ser Pro Gln Glu Gln Met Glu Arg Ile Tyr Ala His Ala Gly				
275 280 285				
ggc gcg gtg atg atg gcg tcc att att ttg gcg gca ggt acg ttt ttg	912			
Gly Ala Val Met Met Ala Ser Ile Ile Leu Ala Ala Gly Thr Phe Leu				
290 295 300				
ggg att ttg aag ggc gcg ggg atg ttg gac gcg att tcc aaa gac ctt	960			
Gly Ile Leu Lys Gly Ala Gly Met Leu Asp Ala Ile Ser Lys Asp Leu				
305 310 315 320				
gtg cat atc ctg ccg gac gcg ttg ctg cct tat ctg cat att gcc atc	1008			
Val His Ile Leu Pro Asp Ala Leu Leu Pro Tyr Leu His Ile Ala Ile				
325 330 335				
ggt gtg ttg ggt att ccg ctt gag ttg gtt ttg agt acg gac gct tat	1056			
Gly Val Leu Gly Ile Pro Leu Glu Leu Val Leu Ser Thr Asp Ala Tyr				
340 345 350				
tat ttc gga ctg ttt ccg att gtg gaa cag att acc tcg cag gcg ggc	1104			
Tyr Phe Gly Leu Phe Pro Ile Val Glu Gln Ile Thr Ser Gln Ala Gly				
355 360 365				
gtt gca ccc gaa gcg gca ggc tat gcg atg ttg atc ggc agt atc gtc	1152			
Val Ala Pro Glu Ala Ala Gly Tyr Ala Met Leu Ile Gly Ser Ile Val				
370 375 380				
ggt act ttt gtt acg ccg ctt tcg ccg gct ttg tgg atg ggt ttg ggt	1200			
Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly				
385 390 395 400				
ttg gcg aaa ttg tcg atg ggc aaa cac atc cgt tat tcg ttt ttc tgg	1248			
Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp				
405 410 415				
gcg tgg ggt ttg tcg ctg gcg ata ttg gtc agt tcg ata gcg gca gga	1296			
Ala Trp Gly Leu Ser Leu Ala Ile Leu Val Ser Ser Ile Ala Ala Gly				
420 425 430				
atc gtg cct ctg ccg taa	1314			
Ile Val Pro Leu Pro				
435				

<210> 59  
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<212> PRT  
<213> Neisseria gonorrhoeae

<400> 59  
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Leu Leu Thr Glu Lys Val Ser Pro Ile Ile Ala Leu Ile Leu Val Pro  
20 25 30

Leu	Ile	Gly	Ala	Leu	Leu	Ala	Gly	Phe	Asp	Val	Ser	Gln	Leu		Glu
		35					40					45			
Phe	Tyr	Ser	Gly	Gly	Thr	Lys	Ser	Val	Thr	Gln	Ile	Val	Ile	Met	Phe
	50					55					60				
Met	Phe	Ser	Ile	Leu	Phe	Phe	Gly	Ile	Met	Asn	Asp	Val	Gly	Leu	Phe
65					70					75					80
Arg	Pro	Met	Ile	Gly	Gly	Leu	Ile	Lys	Leu	Thr	Arg	Gly	Asn	Ile	Val
				85					90					95	
Ala	Val	Ser	Val	Gly	Thr	Val	Leu	Val	Ser	Val	Val	Ala	Gln	Leu	Asp
			100				105						110		
Gly	Ala	Gly	Ala	Thr	Thr	Phe	Leu	Ser	Val	Val	Pro	Ala	Leu	Leu	Pro
		115					120					125			
Leu	Tyr	Lys	Arg	Leu	His	Met	Asn	Pro	Tyr	Leu	Leu	Phe	Leu	Leu	Leu
	130				135					140					
Thr	Ser	Ser	Ala	Gly	Leu	Ile	Asn	Leu	Leu	Pro	Arg	Gly	Gly	Pro	Ile
145				150						155					160
Gly	Arg	Val	Ala	Ser	Val	Leu	Gly	Ala	Asp	Val	Gly	Glu	Leu	Tyr	Lys
				165					170					175	
Pro	Leu	Leu	Thr	Val	Gln	Ile	Ile	Gly	Val	Val	Phe	Ile	Leu	Val	Leu
			180					185					190		
Ser	Leu	Phe	Leu	Gly	Val	Arg	Glu	Lys	Arg	Arg	Ile	Val	Arg	Glu	Leu
		195					200					205			
Gly	Ala	Leu	Pro	Ala	Val	Ala	Asp	Leu	Ile	Lys	Pro	Ala	Pro	Leu	Ser
	210					215					220				
Glu	Glu	Glu	Gln	Lys	Leu	Ala	Arg	Pro	Lys	Leu	Phe	Trp	Trp	Asn	Val
225				230						235					240
Leu	Leu	Phe	Leu	Ala	Ala	Met	Ser	Leu	Leu	Phe	Ser	Gly	Ile	Phe	Pro
				245					250					255	
Pro	Gly	Tyr	Val	Phe	Met	Leu	Ala	Ala	Thr	Ala	Ala	Leu	Leu	Leu	Asn
			260				265						270		
Tyr	Arg	Ser	Pro	Gln	Glu	Gln	Met	Glu	Arg	Ile	Tyr	Ala	His	Ala	Gly
		275					280					285			
Gly	Ala	Val	Met	Met	Ala	Ser	Ile	Ile	Leu	Ala	Ala	Gly	Thr	Phe	Leu
	290					295					300				
Gly	Ile	Leu	Lys	Gly	Ala	Gly	Met	Leu	Asp	Ala	Ile	Ser	Lys	Asp	Leu
305				310						315					320
Val	His	Ile	Leu	Pro	Asp	Ala	Leu	Leu	Pro	Tyr	Leu	His	Ile	Ala	Ile
				325					330					335	
Gly	Val	Leu	Gly	Ile	Pro	Leu	Glu	Leu	Val	Leu	Ser	Thr	Asp	Ala	Tyr
			340				345						350		
Tyr	Phe	Gly	Leu	Phe	Pro	Ile	Val	Glu	Gln	Ile	Thr	Ser	Gln	Ala	Gly
		355					360					365			
Val	Ala	Pro	Glu	Ala	Ala	Gly	Tyr	Ala	Met	Leu	Ile	Gly	Ser	Ile	Val
	370					375					380				

**SECRET**

Gly Thr Phe Val Thr Pro Leu Ser Pro Ala Leu Trp Met Gly Leu Gly  
 385 395 400

Leu Ala Lys Leu Ser Met Gly Lys His Ile Arg Tyr Ser Phe Phe Trp  
 405 410 415

Ala Trp Gly Leu Ser Leu Ala Ile Leu Val Ser Ser Ile Ala Ala Gly  
 420 425 430

Ile Val Pro Leu Pro  
 435

<210> 60  
 <211> 1155  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> CDS  
 <222> (1)..(1152)

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 Met Gly Ile His Leu Asp Phe Gly Ile Ser Pro Lys Thr Phe Arg Gln  
 1 5 10 15

act tat ctg tat caa aag ccc aag ctc ttt aaa gga gcg gtt cgg aat 96  
 Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Arg Asn  
 20 25 30

ctc gaa gcc gca tct tgt aaa tat atc aac gag ata tac caa cga gca 144  
 Leu Glu Ala Ala Ser Cys Lys Tyr Ile Asn Glu Ile Tyr Gln Arg Ala  
 35 40 45

gac cca acc gca ccg ctg ttt cat ctg cgt aaa aaa ggc gca atc gtt 192  
 Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val  
 50 55 60

cct aaa gaa gaa tac gtc gaa agt ttc gac gat ttg ggc aaa act cgc 240  
 Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg  
 65 70 75 80

tac cgt ttt att aaa tcc gtt atc tac gaa cat atg aag aat ggt gcg 288  
 Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala  
 85 90 95

tcg tta gtc tat aac cat att aac aac gag ccg ttt tca gac cat atc 336  
 Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile  
 100 105 110

gcc cgt caa gtc gcc cgc ttt gcc ggc gca cat act att gtt agt gga 384  
 Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly  
 115 120 125

tat ctt gct ttt ggc agc gac gaa tct tat aaa aac cat tgg gat acc 432  
 Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr  
 130 135 140

cgc gat gtg tat gcc atc cag ctt ttc ggc aag aaa cgt tgg caa ctt 480  
 Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu  
 145 150 155 160

act gcc cct gat ttc cct atg cca ttg tat atg caa cag act aaa gat 528

0930433-08504



Thr Tyr Leu Tyr Gln Lys Pro Lys Leu Phe Lys Gly Ala Val Asn  
 20 25 30  
 Leu Glu Ala Ala Ser Cys Lys Tyr Ile Asn Glu Ile Tyr Gln Arg Ala  
 35 40 45  
 Asp Pro Thr Ala Pro Leu Phe His Leu Arg Lys Lys Gly Ala Ile Val  
 50 55 60  
 Pro Lys Glu Glu Tyr Val Glu Ser Phe Asp Asp Leu Gly Lys Thr Arg  
 65 70 75 80  
 Tyr Arg Phe Ile Lys Ser Val Ile Tyr Glu His Met Lys Asn Gly Ala  
 85 90 95  
 Ser Leu Val Tyr Asn His Ile Asn Asn Glu Pro Phe Ser Asp His Ile  
 100 105 110  
 Ala Arg Gln Val Ala Arg Phe Ala Gly Ala His Thr Ile Val Ser Gly  
 115 120 125  
 Tyr Leu Ala Phe Gly Ser Asp Glu Ser Tyr Lys Asn His Trp Asp Thr  
 130 135 140  
 Arg Asp Val Tyr Ala Ile Gln Leu Phe Gly Lys Lys Arg Trp Gln Leu  
 145 150 155 160  
 Thr Ala Pro Asp Phe Pro Met Pro Leu Tyr Met Gln Gln Thr Lys Asp  
 165 170 175  
 Thr Asp Ile Ser Ile Pro Glu His Ile Asp Met Asp Ile Ile Leu Glu  
 180 185 190  
 Ala Gly Asp Val Leu Tyr Ile Pro Arg Gly Trp Trp His Arg Pro Ile  
 195 200 205  
 Pro Leu Gly Cys Glu Thr Phe His Phe Ala Val Gly Thr Phe Pro Pro  
 210 215 220  
 Asn Gly Tyr Asn Tyr Leu Glu Trp Leu Met Lys Lys Phe Pro Thr Ile  
 225 230 235 240  
 Glu Ser Leu Arg His Ser Phe Ser Asp Trp Glu Gln Asp Arg Thr Arg  
 245 250 255  
 Ile Asn Asp Thr Ala Ala Gln Ile Ala Ala Met Ile Ala Asp Pro Val  
 260 265 270  
 Asn Tyr Glu Ala Phe Ser Glu Asp Phe Leu Gly Lys Glu Arg Thr Asp  
 275 280 285  
 Thr Ala Phe His Leu Glu Gln Phe Ala Asn Pro Asn Ala Thr Pro Leu  
 290 295 300  
 Ser Asp Asp Val Arg Leu Arg Leu Asn Ala Asn Asn Leu Asp Thr Leu  
 305 310 315 320  
 Glu Lys Gly Tyr Leu Ile Gly Asn Gly Met Lys Ile Ser Val Asp Glu  
 325 330 335  
 Leu Gly Lys Lys Val Leu Glu His Ile Gly Lys Asn Glu Pro Leu Leu  
 340 345 350  
 Leu Lys Asn Leu Leu Val Asn Phe Asn Gln Ala Lys His Glu Glu Val  
 355 360 365

0930433-081504



Arg Lys Leu Ile Tyr Gln Leu Ile Glu Leu Asp Phe Leu Glu Ile Leu  
 370 380

<210> 62  
 <211> 717  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(714)

<400> 62  
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 Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala  
 1 5 10 15  
 cgc caa acc agc ctg acg ggt aaa gtg att ctg aca cga ccg ttg tca 96  
 Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser  
 20 25 30  
 ttt tcc cta tgg acg aca ttt gca tcg ata tct gcg tta ttg att atc 144  
 Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile  
 35 40 45  
 ctg ttt ttg ata ttt ggt aac tat acg cga aag aca aca gtg gag gga 192  
 Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly  
 50 55 60  
 caa att tta cct gca tcg ggc gta atc agg gtg tat gca ccg gat acg 240  
 Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr  
 65 70 75 80  
 ggg aca att aca gcg aaa ttc gtg gaa gat gga gaa aag gtt aag gct 288  
 Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala  
 85 90 95  
 ggc gac aag cta ttt gcg ctt tcg acc tca cgt ttc ggc gca gga gat 336  
 Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp  
 100 105 110  
 agc gtg cag cag cag ttg aaa acg gag gca gtt ttg aag aaa acg ttg 384  
 Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu  
 115 120 125  
 gca gaa cag gaa ctg ggt cgt ctg aag ctg ata cac ggg aat gaa acg 432  
 Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr  
 130 135 140  
 cgc agc ctt aaa gca act gtc gaa cgt ttg gaa aac cag gaa ctc cat 480  
 Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Glu Leu His  
 145 150 155 160  
 att tcg caa cag ata gac ggt cag aaa agg cgc att aga ctt gcg gaa 528  
 Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu  
 165 170 175  
 gaa atg ttg cag aaa tat cgt ttc cta tcc gcc aat gat gca gtg cca 576  
 Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro  
 180 185 190  
 aaa caa gaa atg atg aat gtc aag gca gag ctt tta gag cag aaa gcc 624  
 Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala

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195

200

205

aaa ctt gat gcc tac' cgd a gaa gaa gtc ggg ctg ctt cag c atc 672  
 Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile  
 210 215 220

cgc acg cag aat ctg aca ttg gcc agc ctc' ccc caa gcg gca tga 717  
 Arg Thr Gln Asn Leu Thr Leu Ala Ser Leu Pro Gln Ala Ala  
 225 230 235

&lt;210&gt; 63

&lt;211&gt; 238

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 63

Met Asn Arg Pro Lys Gln Pro Phe Phe Arg Pro Glu Val Ala Val Ala  
 1 5 10 15

Arg Gln Thr Ser Leu Thr Gly Lys Val Ile Leu Thr Arg Pro Leu Ser  
 20 25 30

Phe Ser Leu Trp Thr Thr Phe Ala Ser Ile Ser Ala Leu Leu Ile Ile  
 35 40 45

Leu Phe Leu Ile Phe Gly Asn Tyr Thr Arg Lys Thr Thr Val Glu Gly  
 50 55 60

Gln Ile Leu Pro Ala Ser Gly Val Ile Arg Val Tyr Ala Pro Asp Thr  
 65 70 75 80

Gly Thr Ile Thr Ala Lys Phe Val Glu Asp Gly Glu Lys Val Lys Ala  
 85 90 95

Gly Asp Lys Leu Phe Ala Leu Ser Thr Ser Arg Phe Gly Ala Gly Asp  
 100 105 110

Ser Val Gln Gln Gln Leu Lys Thr Glu Ala Val Leu Lys Lys Thr Leu  
 115 120 125

Ala Glu Gln Glu Leu Gly Arg Leu Lys Leu Ile His Gly Asn Glu Thr  
 130 135 140

Arg Ser Leu Lys Ala Thr Val Glu Arg Leu Glu Asn Gln Glu Leu His  
 145 150 155 160

Ile Ser Gln Gln Ile Asp Gly Gln Lys Arg Arg Ile Arg Leu Ala Glu  
 165 170 175

Glu Met Leu Gln Lys Tyr Arg Phe Leu Ser Ala Asn Asp Ala Val Pro  
 180 185 190

Lys Gln Glu Met Met Asn Val Lys Ala Glu Leu Leu Glu Gln Lys Ala  
 195 200 205

Lys Leu Asp Ala Tyr Arg Arg Glu Glu Val Gly Leu Leu Gln Glu Ile  
 210 215 220

Arg Thr Gln Asn Leu Thr Leu Ala Ser Leu Pro Gln Ala Ala  
 225 230 235

&lt;210&gt; 64

&lt;211&gt; 690

09030433-081604

<212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> CDS  
 <222> (1)..(687)

<400> 64

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1 5 10 15	
gcc tac ggc cga gaa gaa gcc ggg ctg ctt cag gaa atc cgc acg cag	96
Ala Tyr Gly Arg Glu Glu Ala Gly Leu Leu Gln Glu Ile Arg Thr Gln	
20 25 30	
aat ctg aca ttg gcc agc ctc ccc aaa cgg cat gag aca gaa caa agc	144
Asn Leu Thr Leu Ala Ser Leu Pro Lys Arg His Glu Thr Glu Gln Ser	
35 40 45	
cag ctt gaa cgc acc atg gcc gat att tct caa gaa gtt ttg gat ttt	192
Gln Leu Glu Arg Thr Met Ala Asp Ile Ser Gln Glu Val Leu Asp Phe	
50 55 60	
gaa atg cgc tct gaa caa atc atc cgt gca gga cgg tcg ggt tat ata	240
Glu Met Arg Ser Glu Gln Ile Ile Arg Ala Gly Arg Ser Gly Tyr Ile	
65 70 75 80	
gca ata ccg aac gtc gaa gtc gga cgg cag gtt gat cct tcc aaa ctg	288
Ala Ile Pro Asn Val Glu Val Gly Arg Gln Val Asp Pro Ser Lys Leu	
85 90 95	
ctc ttg agc att gtt ccc gaa cgt acc gag tta tat gcc cat cta tat	336
Leu Leu Ser Ile Val Pro Glu Arg Thr Glu Leu Tyr Ala His Leu Tyr	
100 105 110	
atc ccc agc agt gca gca ggc ttt atc aag ccg aaa gac aag gtt gtc	384
Ile Pro Ser Ser Ala Ala Gly Phe Ile Lys Pro Lys Asp Lys Val Val	
115 120 125	
cta cgt tat cag gca tat ccc tat cag aaa ttc ggg ctt gct tcc ggc	432
Leu Arg Tyr Gln Ala Tyr Pro Tyr Gln Lys Phe Gly Leu Ala Ser Gly	
130 135 140	
agt gtc gta tca gtg gca aaa acg gca ctg ggc aga cag gaa ttg tcg	480
Ser Val Val Ser Val Ala Lys Thr Ala Leu Gly Arg Gln Glu Leu Ser	
145 150 155 160	
gga ttg ggc atg gta tcc tcc gat ttg gcg aag agc aac gaa cct gtt	528
Gly Leu Gly Met Val Ser Ser Asp Leu Ala Lys Ser Asn Glu Pro Val	
165 170 175	
tat ctc gtg aaa ata aaa ccc gac aaa cca acc atc act gca tac ggt	576
Tyr Leu Val Lys Ile Lys Pro Asp Lys Pro Thr Ile Thr Ala Tyr Gly	
180 185 190	
gag gaa aaa ccg ctg caa atc ggc atg acg ctg gaa gca gac atc cta	624
Glu Glu Lys Pro Leu Gln Ile Gly Met Thr Leu Glu Ala Asp Ile Leu	
195 200 205	
cac gag aaa cgg cgg ctg tac gaa tgg gta ttg gag ccg att tac agt	672
His Glu Lys Arg Arg Leu Tyr Glu Trp Val Leu Glu Pro Ile Tyr Ser	
210 215 220	
atg tcg ggc agg ttg taa	690
Met Ser Gly Arg Leu	

109780 22102560

<210> 65  
 <211> 229  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 65

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 Ala Tyr Gly Arg Glu Glu Ala Gly Leu Leu Gln Glu Ile Arg Thr Gln  
 20 25 30  
 Asn Leu Thr Leu Ala Ser Leu Pro Lys Arg His Glu Thr Glu Gln Ser  
 35 40 45  
 Gln Leu Glu Arg Thr Met Ala Asp Ile Ser Gln Glu Val Leu Asp Phe  
 50 55 60  
 Glu Met Arg Ser Glu Gln Ile Ile Arg Ala Gly Arg Ser Gly Tyr Ile  
 65 70 75 80  
 Ala Ile Pro Asn Val Glu Val Gly Arg Gln Val Asp Pro Ser Lys Leu  
 85 90 95  
 Leu Leu Ser Ile Val Pro Glu Arg Thr Glu Leu Tyr Ala His Leu Tyr  
 100 105 110  
 Ile Pro Ser Ser Ala Ala Gly Phe Ile Lys Pro Lys Asp Lys Val Val  
 115 120 125  
 Leu Arg Tyr Gln Ala Tyr Pro Tyr Gln Lys Phe Gly Leu Ala Ser Gly  
 130 135 140  
 Ser Val Val Ser Val Ala Lys Thr Ala Leu Gly Arg Gln Glu Leu Ser  
 145 150 155 160  
 Gly Leu Gly Met Val Ser Ser Asp Leu Ala Lys Ser Asn Glu Pro Val  
 165 170 175  
 Tyr Leu Val Lys Ile Lys Pro Asp Lys Pro Thr Ile Thr Ala Tyr Gly  
 180 185 190  
 Glu Glu Lys Pro Leu Gln Ile Gly Met Thr Leu Glu Ala Asp Ile Leu  
 195 200 205  
 His Glu Lys Arg Arg Leu Tyr Glu Trp Val Leu Glu Pro Ile Tyr Ser  
 210 215 220  
 Met Ser Gly Arg Leu  
 225

<210> 66  
 <211> 924  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<220>  
 <221> CDS  
 <222> (1)..(921)

<400> 66

0980433 081604



270

924

<400> 67															
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			20					25					30		
Ser	His	Ala	Asp	Trp	Val	Ile	Thr	Gly	Val	Pro	Tyr	Asp	Met	Ala	Val
		35					40					45			
Ser	Gly	Arg	Ser	Gly	Ala	Arg	Phe	Gly	Pro	Glu	Ala	Ile	Arg	Arg	Ala
	50					55					60				
Ser	Val	Asn	Leu	Ala	Trp	Glu	His	Arg	Arg	Phe	Pro	Trp	Thr	Phe	Asp
65					70					75					80
Val	Arg	Glu	Arg	Leu	Asn	Ile	Ile	Asp	Cys	Gly	Asp	Leu	Val	Phe	Ser
				85					90					95	
Phe	Gly	Asp	Ser	Arg	Asp	Phe	Val	Glu	Lys	Met	Glu	Ala	His	Ala	Gly
			100					105					110		
Lys	Leu	Leu	Ser	Phe	Gly	Lys	Arg	Cys	Leu	Ser	Leu	Gly	Gly	Asp	His
		115					120					125			
Phe	Ile	Thr	Leu	Pro	Leu	Leu	Arg	Ala	His	Ala	Arg	Tyr	Phe	Gly	Lys
	130					135					140				
Leu	Ala	Leu	Ile	His	Phe	Asp	Ala	His	Thr	Asp	Thr	Tyr	Asp	Asn	Gly
145					150					155					160
Ser	Glu	Tyr	Asp	His	Gly	Thr	Met	Phe	Tyr	Thr	Ala	Pro	Lys	Glu	Gly
				165					170					175	
Leu	Ile	Asp	Pro	Ser	Arg	Ser	Val	Gln	Ile	Gly	Ile	Arg	Thr	Glu	His
			180					185					190		
Ser	Lys	Lys	Leu	Pro	Phe	Thr	Val	Leu	Ser	Ala	Pro	Lys	Val	Asn	Glu
		195					200					205			
Asp	Ser	Val	Glu	Glu	Thr	Val	Arg	Lys	Ile	Lys	Glu	Thr	Val	Gly	Asn
	210					215					220				
Met	Pro	Val	Tyr	Leu	Thr	Phe	Asp	Ile	Asp	Cys	Leu	Asp	Pro	Ser	Phe
225					230					235					240

[illegible]



ctg Leu	ttg Leu	aaa Lys	gtt Val	gcc Ala 165	gaa Glu	gtt Phe	tat Tyr	ttc Phe	aac Asn 170	gtt Val	tta Leu	ctc Leu	agc Ser	gac Asp 175	528	
acc Thr	gtt Val	gcc Ala	gcc Ala 180	cat His	gcg Ala	gcg Ala	gaa Glu	aaa Lys 185	gag Glu	gct Ala	tat Tyr	gcc Ala	cag Gln 190	cag Gln	gta Val	576
agg Arg	cag Gln	gcg Ala 195	cag Gln	gct Ala	tta Leu	ttc Phe	aat Asn 200	aaa Lys	ggg Gly	gct Ala	gcc Ala	acc Thr 205	gcg Ala	ctg Leu	gat Asp	624
att Ile	cac His 210	gaa Glu	gcc Ala	aaa Lys	gcc Ala	ggg Gly 215	tac Tyr	gac Asp	aat Asn	gcc Ala	ctg Leu 220	gcc Ala	caa Gln	gaa Glu	atc Ile	672
gcc Ala 225	gta Val	ttg Leu	gct Ala	gag Glu	aaa Lys 230	caa Gln	acc Thr	tat Tyr	gaa Glu	aac Asn 235	cag Gln	ttg Leu	aac Asn	gac Asp	tac Tyr 240	720
acc Thr	gac Asp	ctg Leu	gat Asp	agc Ser 245	aaa Lys	caa Gln	atc Ile	gag Glu	gcc Ala 250	ata Ile	gat Asp	acc Thr	gcc Ala	aac Asn 255	ctg Leu	768
ttg Leu	gca Ala	cgc Arg	tat Tyr 260	ctg Leu	ccc Pro	aag Lys	ctg Leu	gaa Glu 265	cgt Arg	tac Tyr	agt Ser	ctg Leu	gat Asp 270	gaa Glu	tgg Trp	816
cag Gln	cgc Arg	att Ile 275	gcc Ala	tta Leu	tcc Ser	aac Asn	aat Asn 280	cat His	gaa Glu	tac Tyr	cgg Arg	atg Met 285	cag Gln	cag Gln	ctt Leu	864
gcc Ala 290	ctg Leu	caa Gln	agc Ser	agc Ser	gga Gly	cag Gln 295	gcg Ala	ctt Leu	cgg Arg	gca Ala	gca Ala 300	cag Gln	aac Asn	agc Ser	cgc Arg	912
tat Tyr 305	ccc Pro	acc Thr	gtt Val	tct Ser	gcc Ala 310	cat His	gtc Val	ggc Gly	tat Tyr	cag Gln 315	aat Asn	aac Asn	ctc Leu	tac Tyr	act Thr 320	960
tca Ser	tct Ser	gcg Ala	cag Gln	aat Asn 325	aat Asn	gac Asp	tac Tyr	cac His	tat Tyr 330	cgg Arg	ggc Gly	aaa Lys	ggg Gly	atg Met 335	agc Ser	1008
gtc Val	ggc Gly	gta Val	cag Gln 340	ttg Leu	aat Asn	ttg Leu	ccg Pro	ctt Leu 345	tat Tyr	acc Thr	ggc Gly	gga Gly	gaa Glu 350	ttg Leu	tcg Ser	1056
ggc Gly	aaa Lys	atc Ile 355	cat His	gaa Glu	gcc Ala	gaa Glu	gcg Ala 360	caa Gln	tac Tyr	ggg Gly	gcc Ala	gcc Ala 365	gaa Glu	gca Ala	cag Gln	1104
ctg Leu	acc Thr 370	gca Ala	acc Thr	gag Glu	cgg Arg	cac His 375	atc Ile	aaa Lys	ctc Leu	gcc Ala 380	gta Val	cgc Arg	cag Gln	gct Ala	tat Tyr	1152
acc Thr 385	gaa Glu	agc Ser	ggg Gly	gcg Ala	gcg Ala 390	cgt Arg	tac Tyr	caa Gln	atc Ile	atg Met 395	gcg Ala	caa Gln	gaa Glu	cgg Arg	gtt Val 400	1200
ttg Leu	gaa Glu	agc Ser	agc Ser	cgt Arg 405	ttg Leu	aaa Lys	ctg Leu	aaa Lys	tcg Ser 410	acc Thr	gaa Glu	acc Thr	ggc Gly	caa Gln 415	caa Gln	1248
tac	ggc	atc	cgc	aac	cgq	ctg	gaa	gta	ata	cgq	gcg	cgq	cag	gaa	gtc	1296

**09874**



Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val  
 420 425 430  
 gcc caa gca gaa cag aaa ctg gct caa gca cgg tat aaa ttc atg ctg 1344  
 Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu  
 435 440 445  
 gct tat ttg cgc ttg gtg aaa gag agc ggg tta ggg ttg gaa acg gta 1392  
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 <213> Neisseria meningitidis

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 Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu  
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 Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala  
 50 55 60  
 Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr  
 65 70 75 80  
 Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe  
 85 90 95  
 Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser  
 100 105 110  
 Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln  
 115 120 125  
 Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe  
 130 135 140  
 Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu  
 145 150 155 160  
 Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp  
 165 170 175  
 Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val  
 180 185 190  
 Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp  
 195 200 205  
 Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile  
 210 215 220  
 Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr  
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Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly	
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Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr	
65 70 75 80	
gcc cta tat ttg ccg gtc ggc tgg ctg tat ggt gcg cct tct tat cag	288
Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln	
85 90 95	
ata gtc ggt tcg ata ttg gaa agc aat cct gcc gag gcg cgt gaa ttt	336
Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe	
100 105 110	
gtc ggc aat ctt ccc ggg tcg ctt tat ttt gtg cag gca tta ttt ttc	384
Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe	
115 120 125	
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Ile Phe Gly Leu Thr Val Trp Lys Tyr Cys Val Ser Val Gly Val Phe	
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Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile	
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Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Glu Lys Ile Ala Gly	
165 170 175	
gat aaa gat tgg cga gaa cct gat gcc ggc ctg ttg ttg aat att ttc	576
Asp Lys Asp Trp Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe	
180 185 190	
gac ctg tat tac gac ttg gct ttc cgc gcc ggc aca ata tgc cgc caa	624
Asp Leu Tyr Tyr Asp Leu Ala Phe Arg Ala Gly Thr Ile Cys Arg Gln	
195 200 205	
gcg cgc cca cat ttt gga agc agc aaa aaa agc gtc aac atg gca tat	672
Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr	
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Pro Pro Thr Cys Ala Gln Val	
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<213> Neisseria gonorrhoeae

<400> 71

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Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala

09830433.081604

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Ala	Leu	Tyr	Leu	Pro	Val	Gly	Trp	Leu	Tyr	Gly	Ala	Pro	Ser	Tyr	Gln														
				85					90					95															
Ile	Val	Gly	Ser	Ile	Leu	Glu	Ser	Asn	Pro	Ala	Glu	Ala	Arg	Glu	Phe														
			100					105					110																
Val	Gly	Asn	Leu	Pro	Gly	Ser	Leu	Tyr	Phe	Val	Gln	Ala	Leu	Phe	Phe														
		115					120					125																	
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Ala	Asp	Val	Lys	Asn	Tyr	Lys	Arg	Arg	Ser	Lys	Ile	Trp	Leu	Thr	Ile														
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Asp	Lys	Asp	Trp	Arg	Glu	Pro	Asp	Ala	Gly	Leu	Leu	Leu	Asn	Ile	Phe														
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Asp	Leu	Tyr	Tyr	Asp	Leu	Ala	Phe	Arg	Ala	Gly	Thr	Ile	Cys	Arg	Gln														
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1				5					10					15						
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Glu	Tyr	Tyr	Asp	Ala	Arg	Ala	Ala	Cys	Glu	Gly	Ile	Lys	Pro	Gly	Ser					
			20					25					30							
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Tyr	Asp	Lys	Leu	Pro	Tyr	Thr	Ser	Arg	Ile	Leu	Ala	Glu	Asn	Leu	Val					
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aac cgc gcg gac aaa gtc gat ttg ccg acg ctg caa agc tgg ctg ggt																				192
Asn	Arg	Ala	Asp	Lys	Val	Asp	Leu	Pro	Thr	Leu	Gln	Ser	Trp	Leu	Gly					
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325

330

335

gcc aaa acc gca ggc ttg gca gat gcc ttg aaa acc gcc tat	1056
Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr	
340 345 350	
ccg cgc gtt ttg aaa ttt gat ttg agc agc gta acg cgc aat atg gca	1104
Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala	
355 360 365	
ggc ccg agc aac ccg cac gcg cgt ttt gcg acc gcc gat ttg gcc ggc	1152
Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala Gly	
370 375 380	
aaa ggc ttg gct aaa cct tac gaa gag cct tca gac ggc caa atg cct	1200
Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro	
385 390 395 400	
gac ggt gca gtg att att gcc gcg att act tcc tgt acc aat act tcc	1248
Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser	
405 410 415	
aat ccg cgc aac gtt gtc gcc gcc gcg ctg ttg gca cgc aat gcc aac	1296
Asn Pro Arg Asn Val Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn	
420 425 430	
cgc ctc ggc ttg caa cgc aaa cct tgg gtg aaa tct tcg ttt gcc ccg	1344
Arg Leu Gly Leu Gln Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro	
435 440 445	
ggt tca aaa gta gcc gaa atc tat ttg aaa gaa gca gat ctg ctg ccc	1392
Gly Ser Lys Val Ala Glu Ile Tyr Leu Lys Glu Ala Asp Leu Leu Pro	
450 455 460	
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Glu Met Glu Lys Leu Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr	
465 470 475 480	
tgt aac ggc atg agc ggc gcg ctg gat ccg aaa atc cag aaa gaa atc	1488
Cys Asn Gly Met Ser Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile	
485 490 495	
atc gac cgc gat ttg tac gcc acc gcc gta ttg tca ggc aac cgc aac	1536
Ile Asp Arg Asp Leu Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn	
500 505 510	
ttt gac ggc cgt atc cat ccg tat gcg aaa cag gct ttc ctc gct tcg	1584
Phe Asp Gly Arg Ile His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser	
515 520 525	
cct ccg ttg gtc gtt gcc tac gcg ctg gca ggc agc atc cgt ttc gat	1632
Pro Pro Leu Val Val Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp	
530 535 540	
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Ile Glu Asn Asp Val Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu	
545 550 555 560	
aaa gac att tgg cct acc gat gaa gaa atc gat gcc atc gtt gcc gaa	1728
Lys Asp Ile Trp Pro Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu	
565 570 575	
tat gtg aaa ccg cag caa ttt cgc gac gtt tat atc ccg atg ttc gac	1776
Tyr Val Lys Pro Gln Gln Phe Arg Asp Val Tyr Ile Pro Met Phe Asp	
580 585 590	

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acc ggc aca gcg caa aaa gca cca agc ccg ctg tac gac tgg cgt cca	1824
Thr Gly Thr Ala Gln Lys Ala Pro Ser Pro Leu Tyr Asp Trp Ala Pro	
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Met Ser Thr Tyr Ile Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala	
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ggg gaa cgc aca tta agc ggt atg cgt ccg ctg gcg att ttg ccc gac	1920
Gly Glu Arg Thr Leu Ser Gly Met Arg Pro Leu Ala Ile Leu Pro Asp	
625 630 635 640	
aac atc acc acc gac cat ctc tcg cca tcc aat gcg att ttg gca agc	1968
Asn Ile Thr Thr Asp His Leu Ser Pro Ser Asn Ala Ile Leu Ala Ser	
645 650 655	
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Ser Ala Ala Gly Glu Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp	
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Phe Asn Ser Tyr Ala Thr His Arg Gly Asp His Leu Thr Ala Gln Arg	
675 680 685	
gca acc ttc gcc aat ccg aaa ctg ttt aac gaa atg gtg aga aac gaa	2112
Ala Thr Phe Ala Asn Pro Lys Leu Phe Asn Glu Met Val Arg Asn Glu	
690 695 700	
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Asp Gly Ser Val Arg Gln Gly Ser Leu Ala Arg Val Glu Pro Glu Gly	
705 710 715 720	
caa acc atg cgc atg tgg gaa gcc atc gaa acc tat atg aac cgc aaa	2208
Gln Thr Met Arg Met Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys	
725 730 735	
cag ccg ctc atc atc att gcc ggc gcg gac tac ggt caa ggc tca agc	2256
Gln Pro Leu Ile Ile Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser	
740 745 750	
cgc gac tgg gct gca aaa ggc gta cgc ctc gcc ggc gtg gaa gcg att	2304
Arg Asp Trp Ala Ala Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile	
755 760 765	
gtt gcc gaa ggc ttc gag cgt atc cac cgc acc aac ttg atc ggt atg	2352
Val Ala Glu Gly Phe Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met	
770 775 780	
ggc gtg ttg ccg ctg cag ttc aaa ccg ggt acc aac cgc cac acc ctg	2400
Gly Val Leu Pro Leu Gln Phe Lys Pro Gly Thr Asn Arg His Thr Leu	
785 790 795 800	
caa ctg gac ggt acg gaa acc tac gac gtt gtc ggc gaa cgc aca ccg	2448
Gln Leu Asp Gly Thr Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro	
805 810 815	
cgc tgc gac ctg acc ctt gtg att cac cgt aaa aac ggc gag acc gtc	2496
Arg Cys Asp Leu Thr Leu Val Ile His Arg Lys Asn Gly Glu Thr Val	
820 825 830	
gaa gtc ccc att acc tgc cgc ctc gat acc gca gaa gaa gtg ttg gta	2544
Glu Val Pro Ile Thr Cys Arg Leu Asp Thr Ala Glu Glu Val Leu Val	
835 840 845	
tat gaa gcc ggt ggc gta ttg caa cgg ttt gca cag gat ttt ttg gaa	2592
Tyr Glu Ala Gly Gly Val Leu Gln Arg Phe Ala Gln Asp Phe Leu Glu	

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2607

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Asn Arg Ala Asp Lys Val Asp Leu Pro Thr Leu Gln Ser Trp Leu Gly  
50 55 60

Gln Leu Ile Glu Gly Lys Gln Glu Ile Asp Phe Pro Trp Tyr Pro Ala  
65 70 75 80

Arg Val Val Cys His Asp Ile Leu Gly Gln Thr Ala Leu Val Asp Leu .  
85 90 95

Ala Gly Leu Arg Asp Ala Ile Ala Glu Lys Gly Gly Asp Pro Ala Lys  
100 105 110

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Ile Glu Asp Arg Arg Asn Glu Asp Arg Phe His Phe Ile Asn Trp Thr  
145 150 155 160

Lys Thr Ala Phe Glu Asn Val Asp Val Ile Pro Ala Gly Asn Gly Ile  
165 170 175

Met His Gln Ile Asn Leu Glu Lys Met Ser Pro Val Val Gln Val Lys  
180 185 190

Asn Gly Val Ala Phe Pro Asp Thr Cys Val Gly Thr Asp Ser His Thr  
195 200 205

Pro His Val Asp Ala Leu Gly Val Ile Ser Val Gly Val Gly Gly Leu  
210 215 220

Glu Ala Glu Thr Val Met Leu Gly Arg Ala Ser Met Met Arg Leu Pro  
225 230 235 240

Asp Ile Val Gly Val Glu Leu Asn Gly Lys Arg Lys Ala Gly Ile Thr  
245 250 255

Ala Thr Asp Ile Val Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu Arg  
260 265 270

Val Val Gly Ala Phe Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu  
275 280 285



Ser Ile Gly Asp Arg Ala Thr Ile Ser Asn Met Thr Pro Glu Phe Gly  
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 Ala Thr Ala Ala Met Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr Leu  
 305 310 315 320  
 Lys Leu Thr Gly Arg Asp Asp Ala Gln Val Lys Leu Val Glu Thr Tyr  
 325 330 335  
 Ala Lys Thr Ala Gly Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr  
 340 345 350  
 Pro Arg Val Leu Lys Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala  
 355 360 365  
 Gly Pro Ser Asn Pro His Ala Arg Phe Ala Thr Ala Asp Leu Ala Gly  
 370 375 380  
 Lys Gly Leu Ala Lys Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro  
 385 390 395 400  
 Asp Gly Ala Val Ile Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser  
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 Asn Pro Arg Asn Val Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn  
 420 425 430  
 Arg Leu Gly Leu Gln Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro  
 435 440 445  
 Gly Ser Lys Val Ala Glu Ile Tyr Leu Lys Glu Ala Asp Leu Leu Pro  
 450 455 460  
 Glu Met Glu Lys Leu Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr  
 465 470 475 480  
 Cys Asn Gly Met Ser Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile  
 485 490 495  
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 500 505 510  
 Phe Asp Gly Arg Ile His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser  
 515 520 525  
 Pro Pro Leu Val Val Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp  
 530 535 540  
 Ile Glu Asn Asp Val Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu  
 545 550 555 560  
 Lys Asp Ile Trp Pro Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu  
 565 570 575  
 Tyr Val Lys Pro Gln Gln Phe Arg Asp Val Tyr Ile Pro Met Phe Asp  
 580 585 590  
 Thr Gly Thr Ala Gln Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro  
 595 600 605  
 Met Ser Thr Tyr Ile Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala  
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 Gly Glu Arg Thr Leu Ser Gly Met Arg Pro Leu Ala Ile Leu Pro Asp  
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 675 680 685  
 Ala Thr Phe Ala Asn Pro Lys Leu Phe Asn Glu Met Val Arg Asn Glu  
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 Gln Thr Met Arg Met Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys  
 725 730 735  
 Gln Pro Leu Ile Ile Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser  
 740 745 750  
 Arg Asp Trp Ala Ala Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile  
 755 760 765  
 Val Ala Glu Gly Phe Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met  
 770 775 780  
 Gly Val Leu Pro Leu Gln Phe Lys Pro Gly Thr Asn Arg His Thr Leu  
 785 790 795 800  
 Gln Leu Asp Gly Thr Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro  
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 Arg Cys Asp Leu Thr Leu Val Ile His Arg Lys Asn Gly Glu Thr Val  
 820 825 830  
 Glu Val Pro Ile Thr Cys Arg Leu Asp Thr Ala Glu Glu Val Leu Val  
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 aaa ggc gtg ttt ttc aaa cgt tcc gac ctg ccc gag gcg gcg cgg gaa 96  
 Lys Gly Val Phe Phe Lys Arg Ser Asp Leu Pro Glu Ala Ala Arg Glu  
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036043 06160

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gat Asp	ccc Pro 50	tac Tyr	ggc Gly	aag Lys	cag Gln	ata Ile 55	gac Asp	ggt Gly	ttg Leu	ggc Gly	aac Asn 60	gcc Ala	agc Ser	tcg Ser	tcc Ser	192
acc Thr 65	agc Ser	aag Lys	gcg Ala	gtg Val	att Ile 70	ttg Leu	gac Asp	aag Lys	tcc Ser	gaa Glu 75	cgc Arg	gcc Ala	gat Asp	cac His	gat Asp 80	240
gtc Val	gat Asp	tac Tyr	ctt Leu	ttc Phe 85	ggg Gly	caa Gln	gtt Val	tcc Ser	atc Ile 90	gac Asp	aaa Lys	cct Pro	ttt Phe	gtc Val 95	gat Asp	288
tgg Trp	agt Ser	ggc Gly	aac Asn 100	tgc Cys	ggc Gly	aac Asn	ctc Leu	acc Thr 105	gcc Ala	gcc Ala	gtg Val	ggc Gly	gca Ala 110	ttt Phe	gcc Ala	336
atc Ile	gag Glu	caa Gln 115	ggc Gly	ttg Leu	gtc Val	gat Asp	aaa Lys 120	ggc Gly	aag Lys	att Ile	cct Pro 125	tca Ser	gac Asp	ggc Gly	atc Ile	384
tgc Cys	aca Thr 130	gtc Val	aaa Lys	atc Ile	tgg Trp	cag Gln 135	aaa Lys	aac Asn	atc Ile	ggc Gly	aaa Lys 140	acc Thr	att Ile	att Ile	gcc Ala	432
cat His 145	gta Val	ccg Pro	atg Met	caa Gln	aac Asn 150	ggc Gly	gca Ala	gtt Val	ttg Leu	gaa Glu 155	aca Thr	ggc Gly	gat Asp	ttt Phe	gag Glu 160	480
ctc Leu	gac Asp	ggc Gly	gta Val	acg Thr 165	ttc Phe	ccg Pro	gca Ala	gcc Ala	gaa Glu 170	gta Val	caa Gln	atc Ile	gaa Glu	ttt Phe 175	ctt Leu	528
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gat Asp	gaa Glu	att Ile 195	gat Asp	gtg Val	ccg Pro	aat Asn	ata Ile 200	ggc Gly	cgt Arg	ttg Leu	aaa Lys	gcc Ala 205	acg Thr	ctc Leu	atc Ile	624
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<213> Neisseria meningitidis

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Ser	Val	Asn	Gly	Ile	Glu	Arg	Ala	Tyr	Leu	Leu	Pro	Ser	Leu	Lys	Ser
Gly	Ile	Arg	Arg	Ile	Phe	Val	Val	Gly	Leu	Ser	Thr	Gly	Ser	Trp	Ala

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Ile Asn Pro Ala Tyr Arg Ser Leu Ile Ala Asp Glu Pro Gln Ile Ala  
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Pro Leu Leu Gln Asp Lys Arg Val Glu Ile Val Leu Asp Asp Gly Arg  
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Lys Trp Leu Arg Arg His Pro Asp Glu Lys Phe Asp Leu Ile Leu Met  
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Asn Ser Thr Trp Tyr Trp Arg Ala Tyr Ser Thr Asn Leu Leu Ser Ala  
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Glu Phe Leu Lys Gln Val Gln Ser His Leu Thr Pro Asp Gly Ile Val  
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Ser Ile Pro Tyr Ala Tyr Arg Tyr Gly His Met Val Val Gly Ser Ala  
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Arg Leu Ile Trp Pro Glu Ser Gly Arg His Val Phe Asp Ser Ser Thr  
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32

<210> 112  
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<212> DNA  
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<220>  
<223> Description of Artificial Sequence: primer

<400> 112  
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34

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<210> 113  
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<400> 129  
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28

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